

GenCore version 5.1.3  
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OM nucleic - nucleic search, using sw model

Run on: January 14, 2003, 14:17:52 ; Search time 3116 Seconds  
(without alignments)  
5884.072 Million cell updates/sec

Title: US-09-820-339A-1

Perfect score: 630  
Sequence: 1 tcgcacatgagaccgcgtct.....acttcgtcatgcagcgcctg 630

Scoring table: IDENTITY\_NUC

Gapop 10.0 , Gapext 1.0

Searched: 2054640 seqs, 14551402878 residues

tal number of hits satisfying chosen parameters: 4109280

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database :

GenEmbl.\*

- 1: gb\_ba.\*
- 2: gb\_hgt.\*
- 3: gb\_in.\*
- 4: gb\_om.\*
- 5: gb\_ov.\*
- 6: gb\_pat.\*
- 7: gb\_ph.\*
- 8: gb\_pl.\*
- 9: gb\_pr.\*
- 10: gb\_ro.\*
- 11: gb\_sts.\*
- 12: gb\_sv.\*
- 13: gb\_un.\*
- 14: gb\_vl.\*
- 15: em\_ba.\*
- 16: em\_fun.\*
- 17: em\_hum.\*
- 18: em\_in.\*
- 19: em\_mu.\*
- 20: em\_om.\*
- 21: em\_or.\*
- 22: em\_ov.\*
- 23: em\_pat.\*
- 24: em\_ph.\*
- 25: em\_pl.\*
- 26: em\_ro.\*
- 27: em\_sts.\*
- 28: em\_un.\*
- 29: em\_vl.\*
- 30: em\_hgt\_hum.\*
- 31: em\_hgt\_inv.\*
- 32: em\_hgt\_other.\*
- 33: em\_hgt\_mus.\*
- 34: em\_hgt\_pln.\*
- 35: em\_hgt\_rod.\*
- 36: em\_hgt\_man.\*
- 37: em\_hgt\_vrt.\*
- 38: em\_sy.\*
- 39: em\_hgtgo\_hum.\*
- 40: em\_hgtgo\_mus.\*
- 41: em\_hgtgo\_other.\*

Pred. No. is the number of results predicted by chance to have a

score greater than or equal to the score of the result being printed,  
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Match	Length	DB	ID	Description
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5	623.6	99.0	645	12	SYNDMACRS	M64695 synthetic h
6	564.4	89.6	3618	4	BTACHRAL	X02509 B.Taurus mr
7	561.2	89.1	1380	4	AB021708	X02509 B.Taurus mr
8	526	83.5	1769	10	MUSACHRAM	AB021708 Canis fam
9	526	83.5	1860	10	MUSACHRAM	X03986 Mouse mRNA
10	522.8	83.0	1849	10	RNACHRA1	M17640 Mus musculu
11	426.8	67.7	1393	5	GA250359	X74832 R.norvegicu
12	354	56.2	2043	5	FSCACHRA	AJ250359 Gallus ga
13	350.8	55.7	1350	6	AR106255	J00963 Ray (T.call
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15	348	55.2	1421	5	XLACHRA	M25893 T.marmorata
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17	316.4	50.2	2218	5	DRU70438	X17244 Xenopus mrn
18	228.4	36.3	1956	4	BTACHRECA	U70438 Danio rerio
19	226.4	35.9	1756	6	AR055253	X57032 B.taurus mr
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ALIGNMENTS

RESULT 1

A83283

LOCUS

DEFINITION

ACCESSION

VERSION

KEYWORDS

SOURCE

ORGANISM

REFERENCE

AUTHORS

TITLE

A83283 Sequence 3 from Patent WO9850544.  
A83283  
A83283.1 GI:6732701  
human.  
Homo sapiens  
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.  
1 (bases 1 to 630)  
Barchan,D. and Fuchs,S.  
RECOMBINANT FRAGMENTS OF THE HUMAN ACETYLCHOLINE RECEPTOR AND THEIR  
USE FOR TREATMENT OF MYASTHENIA GRAVIS

linear PAT 21-JAN-2000

JOURNAL Patent: WO 9850544-A 3 12-NOV-1998;  
BARSHAN DORA (IL); FUCHS SARA (IL)  
FEATURES Location/Qualifiers  
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Best Local Similarity 100.0%; Pred. No. 1.5e-136;  
Matches 630; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
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RESULT 2  
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LOCUS Homo sapiens, Similar to cholinergic receptor, nicotinic, alpha  
DEFINITION polypeptide 1 (muscle), clone MGC:12708 IMAGE:4124038, mRNA,  
complete cds.  
ACCESSION BC006314  
VERSION BC006314.1 GI:13623428  
KEYWORDS MGC.  
SOURCE Homo sapiens.  
ORGANISM Homo sapiens  
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.

REFERENCE  
AUTHORS  
TITLE  
JOURNAL

1 (bases 1 to 1599)  
Strausberg,R.  
Direct Submission  
Submitted (09-APR-2001) National Institutes of Health, Mammalian  
Gene Collection (MGC), Cancer Genomics Office, National Cancer  
Institute, 31 Center Drive, Room 11A03, Bethesda, MD 20892-2590,  
USA  
NIH-MGC Project URL: http://mgc.nci.nih.gov  
Contact: MGC help desk  
Email: cgapbs-r@mail.nih.gov  
Tissue Procurement: ATCC  
cDNA Library Preparation: Rubin Laboratory  
cDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL)  
DNA Sequencing by: National Institutes of Health Intramural  
Sequencing Center (NISC),  
Gaithersburg, Maryland;  
Web site: http://www.nisc.nih.gov/  
Contact: nisc\_mgc@hgrl.nih.gov

Shvchenko,Y., Wetherby,K.D., Beckstrom-Sternberg,S.M.,  
Benjamin,B., Blakesley,R.W., Bouffard,G.G., Brinkley,C., Brooks,S.,  
Dietrich,N.L., Guan,X., Gupta,J., Ho,S.-L., Karlins,E., Legaspi,R.,  
Lim,M., Maduro,Q.L., Masello,C., Mastrian,S.D., McCloskey,J.C.,  
McDowell,J., Pearson,R., Snyder,B., Stantripop,S., Thomas,P.J.,  
Tiongson,E.E., Touchman,J.W., Tsurgeon,C., Vogt,J.L., Walker,M.A.,  
Zhang,L.-H. and Green,E.D.  
Clone distribution: MGC clone distribution information can be found  
through the I.M.A.G.E. Consortium/LLNL at: http://image.llnl.gov  
Series: IRAL Plate: 17 Row: g Column: 3  
This clone was selected for full length sequencing because it  
passed the following selection criteria: matched mRNA gi: 4557456.  
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Best Local Similarity 99.8%; Pred. No. 3.9e-136;  
Matches 629; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

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QY 61 CCAGTGGAGACACCGCAGCTGTCGAGGTACCGTGGGCTGCAGCTGATACAGCTC 120  
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## RESULT 3

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LOCUS  
DEFINITION Human mRNA for muscle acetylcholine receptor alpha subunit.  
ACCESSION Y00762  
VERSION Y00762.1 GI:28308  
KEYWORDS acetylcholine receptor alpha.  
SOURCE Homo sapiens.  
ORGANISM Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.  
REFERENCE 1 (bases 1 to 1667)  
Schoepfer, R.  
TITLE Direct Submission  
JOURNAL Submitted (03-FEB-1988)  
REFERENCE 2 (bases 1 to 1667)  
Schoepfer, R., Luther, M. and Lindstrom, J.  
TITLE The human medulloblastoma cell line Te671 expresses a muscle-like acetylcholine receptor. Cloning of the alpha-subunit cDNA  
JOURNAL FEBS Lett. 226 (2), 235-240 (1988)  
MEDLINE 88112190  
PUBMED 3338555

## .FEATURES

## Location/Qualifiers

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## CDS

RESULT 4  
S77094  
LOCUS  
DEFINITION nicotinic acetylcholine receptor alpha subunit|AChR alpha subunit  
[human, thymic carcinoma, myasthenia gravis-associated thymoma  
patient 1494/88, mRNA Partial, 1676 nt].  
ACCESSION S77094  
VERSION S77094.1 GI:998469  
KEYWORDS Homo sapiens  
SOURCE Homo sapiens  
ORGANISM Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.  
REFERENCE 1 (bases 1 to 1676)

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Best Local Similarity 99.8%; Pred. No. 3.9e-136;  
Matches 629; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 1 TCCGAACATGAGACCCCTCTGTGGCAAGCTATTTAAAGACTACACGACGCGTGGCGG 60  
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Db 709 ATCACTTACCACTTCGTGTCATGCGCGCTG 738

**AUTHORS** Gattenlohner, S., Brabletz, T., Schultz, A., Marx, A., Muller-Hermelink, H. K. and Kirchner, T.  
**TITLE** Cloning of a cDNA coding for the acetylcholine receptor alpha-subunit from a thymoma associated with myasthenia [correction of myasthenial] gravis  
**JOURNAL** Thymus 23 (2), 103-113 (1994)  
**MEDLINE** 95242389  
**PUBMED** 7725386  
**REMARK** GenBank staff at the National Library of Medicine created this entry [NCBI gbbseq 164456] from the original journal article.

**FEATURES**  
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BASE COUNT	428 a	463 c	370 g	415 t
Query Match	99.7%	Score 628.4;	DB 9;	Length 1676;
Best Local Similarity	99.8%;	Pred. No. 3.9e-136;		
Matches 629; Conservative	0;	Mismatches 1;	Indels 0;	Gaps 0;
QY 1	TCGGAACATCAGACCCCTCTGGTGGCAAGACTATTTAAACACTACACGACGGTGGTGGCG 60			
DB 109	TCGGAACATCAGACCCCTCTGGTGGCAAGACTATTTAAACACTACACGACGGTGGTGGCG 168			
QY 61	CCAGTGAAGACACACCCAGGTCGTGGAGGTCCACCGTGGGCTCGAGCTGATACAGCTC 120			
DB 169	CCAGTGAAGACACACCCAGGTCGTGGAGGTCCACCGTGGGCTCGAGCTGATACAGCTC 228			
QY 121	ATCAATGTGATGAAGTAAATCAGATCGTGACACCAATGTGGCTCTGAAACAGCAATGG 180			
DB 229	ATCAATGTGATGAAGTAAATCAGATCGTGACACCAATGTGGCTCTGAAACAGCAATGG 288			
QY 181	GTGGATTACACCTTAAATGGAATCCAGATGACTATGGCGGTGTGAAAAAATTCACATT 240			
DB 289	GTGGATTACACCTTAAATGGAATCCAGATGACTATGGCGGTGTGAAAAAATTCACATT 348			
QY 241	CCTTCAGAAAAGATCTGGCGCCGACGACTTGTTCTCTATAAGATGACAGATGGTGACATT 300			
DB 349	CCTTCAGAAAAGATCTGGCGCCGACGACTTGTTCTCTATAAGATGACAGATGGTGACATT 408			
QY 301	GCTATTGTCAAGTTACCAAGTGCTCCTGCAGTACACTGGCCACATCAGCTGGACACCT 360			
DB 409	GCTATTGTCAAGTTACCAAGTGCTCCTGCAGTACACTGGCCACATCAGCTGGACACCT 468			
QY 361	CCAGCCATCTTTAAAGCTACTGTGAGATCATCGTACCACATTCCTCTTGTATGACAG 420			
DB 469	CCAGCCATCTTTAAAGCTACTGTGAGATCATCGTACCACATTCCTCTTGTATGACAG 528			
QY 421	AACTGCAGCATGAAGCTGGGCACCTGGACCTACGAGGGCTCTCTCGTGGCCATCAACCCG 480			
DB 529	AACTGCAGCATGAAGCTGGGCACCTGGACCTACGAGGGCTCTCTCGTGGCCATCAACCCG 588			
QY 481	GAAGGACACGACGACCTTGAGCACTTCATGGAGAGCGGGAGTGGGTGATCAAGGAG 540			





Db 249 GTGATTACAACTTGAATCCAGATGACTATATGAGAGGTGAAAAAATTCACATC 308  
 QY 241 CCTTCAGAAAAGATCTGGCCCGCAGACCTGTTCTCTATACAGATGACAGATGGTACTTT 300  
 Db 309 CCCTCGAAAAGATCTGGCCCGCAGAGCTGTTCTCTATACAAACGACAGACGGGACTTT 368  
 QY 301 GCTATTGCTCAAGTTCCACCAAGTCTCTCGAGTACACTGGCCACATCAGCTGGACACCT 360  
 Db 369 GCCATTGCTCAATTCACCAAGGTCTCTGGAGTACACCGGCCACATCAGCTGGACACCG 428  
 QY 361 CCAGCCATCTTTAAAGCTACTGTGAGATCATGTCACCCACCTTCCTTTGATGACAG 420  
 Db 429 CCAGCCATCTTTAAAGCTACTGTGAGATCATGTCACCTTCCCTTCGATGAGCAG 488  
 QY 421 AACTGCAGCATGAAGCTGGCAGCTGACCTAGCAGCGCTCTGTGCGGCATCAACCCG 480  
 Db 489 AACTGCAGCATGAAGCTGGCAGCTGACCTAGCAGCGCTCTGTGCGGCATCAACCCG 548  
 QY 481 GAAAGGACACGACGACCTGAGCACTTCATGGAGAGCGGGAGTGGGTGATCAAGGAG 540  
 Db 549 GAAAGTACACGACCGGACCTGAGTAACCTCATGGAGAGCGGGAGTGGGTGATCAAGGAA 608  
 QY 541 TCCCGGGCTGGAGCACTCCGTGACCTATTCTGCTGCCCGCAGACCCCTACCTGGAC 600  
 Db 609 GCTCGGGCTGGAGCACTCCGTGAGTCTCTCTGCTGCCCGCAGACCCCTACCTGGAC 668  
 QY 601 ATCACTTACCACCTGCTGATGACGCGCTG 630  
 Db 669 ATCACTTACCACCTGCTGATGACGCGCTG 698

## RESULT 9

MUSACHRAB  
 LOCUS  
 DEFINITION Mus musculus acetylcholine receptor alpha-subunit mRNA, complete cds.  
 MI17640  
 VERSION M17640.1 GI:2073542  
 KEYWORDS  
 SOURCE Mus musculus.  
 ORGANISM Mus musculus.  
 Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.  
 1 (bases 1 to 1860)  
 Boulter,J., Luyten,W., Evans,K., Mason,P., Ballivet,M., Goldman,D., Stengelin,S., Martin,G., Heinemann,S. and Patrick,J.  
 Isolation of a clone coding for the alpha-subunit of a mouse acetylcholine receptor  
 J. Neurosci. 5 (9), 2545-2552 (1985)  
 85292055  
 2993547  
 REFERENCE 2 (bases 1 to 1860)  
 AUTHORS Boulter,J.  
 TITLE Direct Submission  
 JOURNAL Submitted (08-MAY-1997) Psychiatry, UCLA, 760 Westwood Plaza, Los Angeles, CA 90095-1759, USA  
 REMARK sequence update  
 COMMENT On May 8, 1997 this sequence version replaced gi:191601.  
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 105. 1478  
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## CDS

## RESULT 10

RNACRA1  
 LOCUS  
 DEFINITION R. norvegicus mRNA for acetylcholine receptor alpha-subunit.  
 ACCESSION X74832  
 VERSION X74832.1 GI:398831  
 KEYWORDS acetylcholine receptor alpha.  
 SOURCE Rattus norvegicus.  
 ORGANISM Rattus norvegicus  
 Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.  
 1 (bases 1 to 1849)  
 Witzemann,V., Stein,E., Barg,B., Konno,T., Koenen,M., Kues,W.,

EKIWRPDVLYNNADODFAIVKFTKVLDDYTHITWTTPAIFKSYCEIIVTHPPFDEQ  
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 LDITYHFVQRLPYFINVVIIPCLLSFLTSVLYFDSDGKMTLSVLSLTVF  
 LVLIVELIPSTSAVPLIGKLYMLFTWVFIASIIIVIVINTHRRSPHIMPEWVRK  
 VFTDITPNIMFESTMRPSRDKQEKRIFTEDIDISGKPGPPMGPHSLIKHPEV  
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BASE COUNT 448 a 498 c 436 g 478 t

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Query Match 83.5%; Score 526; DB 10; Length 1860;  
 Best Local Similarity 89.7%; Pred. No. 3e-112; Indels 0; Gaps 0;  
 Matches 565; Conservative 0; Mismatches 65;  
 QY 1 TCGAATCATGAGACCCGCTCTGGTGGCAAGCTATTTAAAGACTACAGCAGCTGGTGGCG 60  
 Db 165 TCGAATCATGAGACCGCTCTGGTGGCAAGCTCTTTGAAGACTACAGCAGTGTAGTCGG 224  
 QY 61 CCAGTGAAGACACACCCCGAGTCTGGAGGTCAACCTGGCGCTGACAGCTGATACAGCTC 120  
 Db 225 CCAGTGGAGACACCCCGAGTGTACAAGTCAACCGTGGGTCTTACAGCTGATCCAGCTT 284  
 QY 121 ATCAATGTGATGAAGTAAATCAGATCGTGACAAACCAATGTGCGTCTGAAACAGCAATGG 180  
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 Db 705 GCTCGGGCTGGAGACACTGGTGTCTTACTCTGCTGCCCGCAGACCTCCCTACTCTGGAC 764  
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 Db 765 ATCACTTACCACCTTGTGATGACGCGCTG 794





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/product="alpha-1 subunit, nicotinic acetylcholine
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BASE COUNT      354 a      376 c      313 g      350 t
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Best Local Similarity 79.8%; Pred. No. 4e-89;
Matches 503; Conservative 0; Mismatches 127; Indels 0; Gaps 0;
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Db 64 TAGGAGCAGAGAGCGGCTGTGATGACCTGTTCGGGAATACAGCAAGGTGGTGGC 123
QY 61 CCAGTGAAGACACCCCGAGTGGTGGAGGTGACCGTGGCCGTGACGTGATACAGCTC 120
Db 124 CCGTGGAGAAATCACCGGATGCGTGTGCTGCTGACCGTGGGTGACGTCAATTCAGCTC 183
QY 121 ATCAATGTGATGAAGTAAATCAGATCGTGACAAACCAATGCTGCTGAACAGCAATGG 180
Db 184 ATCAATGTGATGAAGTAAATCAGATGTAACAAACCAATGTCGCGCTGAAGCAGCAATGG 243
QY 181 GTGCTATTACAACTAAATGAATCCAGATGACTATGCGCGTGTGAAAAAATTCACATT 240
Db 244 ACAGACATAAACCCTGAAGTGAACCCAGATGACTACGCTGCGTGAACAAATCCGATC 303
QY 241 CTTTCAGAAAGATGTGGCCGCCAGACCTGTTCTCTATTAACGATGAGATGGTACTTT 300
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QY 301 GCTATTGTCAGTTCACCAAGTGCCTCCAGTACACTGACGACGACGACGACGACCT 360
Db 364 GCCATTGTTAAATACCAAGTGCCTCTGGAACACACAGCAAAATCACTGACGACCT 423
QY 361 CCAGCCATCTTTAAAGCTACTGTGAGATCATGCTGACCCACTTCCCTTTGATGAACAG 420
Db 424 CCGTCTATCTTTAAAGTACTGTGAATATAGTCACGTAATTCCTCATTCGATCAGCAG 483
QY 421 AACTGCAGATGAAGTGGGACCTGGACCTAGACGCGTCTGCTGGGCGCATCAACCG 480
Db 484 AACTGTAGCATGAAGTGGGAAGCTGGACGATATGACGCTGCTGCTGACCCCTTACCAACCG 543
QY 481 GAAAGCGACGACGACGACCTGAGCACTTCATGAGAGCGGGAGTGGTATGATCAAGGAG 540
Db 544 GAGAGCGATCGCCCGACCTGAGTAATCTATGAGAGCGGAGTGGTGGTATGAGGAG 603
QY 541 TCCCGGGCTGGAAGCACTCCGTGACCTATTCCTGCTGCCCGACACCCCTTACCTGGAC 600
Db 604 TACCGTGGCTGGAAGCACTGGGTTTACTACGCTGCTGCTGACCCCTTACCTGGAC 663
QY 601 ATCACTACCACTTCGTCATGACGCGCTG 630
Db 664 ATCACTACCACTTCCTCATGACGCGCTG 693

RESULT 12
FSCACHRA
LOCUS
DEFINITION
Ray (T.californica) acetylcholine receptor alpha subunit mRNA,
complete cds.
VERSION
J00963.1 GI:213217
KEYWORDS
acetylcholine receptor.
SOURCE
Ray (T.californica [1]; Torpedo marmorata [2],[4]) electric organ,
cDNA to mRNA.
ORGANISM
Torpedo californica
Eukaryota; Metazoa; Chordata; Vertebrata; Chondrichthyes;
Elasmobranchii; Squalia; Hypnosqualea; Pristiogryae; Batoidae;
Torpediniformes; Torpedinoidei; Torpedinidae; Torpedo.
REFERENCE
1 (bases 102 to 1191; 1207 to 1419)
Sumikawa,K., Houghton,M., Smith,J.C., Bell,L., Richards,B.M. and
Barnard,E.A.
AUTHORS
The molecular cloning and characterisation of cDNA coding for the
TITLE
```

```
alpha subunit of the acetylcholine receptor
Nucleic Acids Res. 10 (19), 5809-5822 (1982)
83064520
6183641
2 (bases 1 to 2045)
Noda,M., Takahashi,H., Tanabe,T., Toyosato,M., Furutani,Y.,
Hirose,T., Asai,M., Inayama,S., Miyata,T. and Numa,S.
Primary structure of alpha-subunit precursor of Torpedo californica
acetylcholine receptor deduced from cDNA sequence
Nature 299 (5886), 793-797 (1982)
83036943
6182472
3 (bases 124 to 1938)
Devillers-Thiery,A., Giraudat,J., Bentabollet,M. and Changeux,J.P.
Complete mRNA coding sequence of the acetylcholine binding
alpha-subunit of Torpedo marmorata acetylcholine receptor: a model
for the transmembrane organization of the polypeptide chain
Proc. Natl. Acad. Sci. U.S.A. 80 (7), 2067-2071 (1983)
83169822
6572962
4 (bases 1 to 2045)
Numa,S., Noda,M., Takahashi,H., Tanabe,T., Toyosato,M., Furutani,Y.
and Kikuyotani,S.
Molecular structure of the nicotinic acetylcholine receptor
Cold Spring Harb. Symp. Quant. Biol. 48 Pt 1, 57-69 (1983)
84206567
6586363
The alpha subunit for the acetylcholine receptor consists of 461
amino acids including a 24 amino acid prepeptide. This subunit is
thought to contain the acetylcholine binding site and [1] suggests
possible sites. Although the sequences [1] versus [2], [4] differ
at > twenty sites, this probably reflects species variation, since
all propose the same protein sequence with exception of the amino
acid residue 42 (site 383). [2] argues that the single mRNA species
forachr-alpha fails to cross-hybridize with the same mRNA from cat
muscle. [4] proposes a model for the transmembrane organization of
the alpha-subunit.
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variation
107 /note="g in [2]; c in [1]"
variation
127 /note="c in [2],[4]; a in [1]"
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FDQNCMTKLGITWYDGTGVSIPESDPDLSTFMESGEWMDYRGKHWYITCCP
DTPYLDTTHFIMORIPLYFVNVIIPCLIFSLTGLVFLYPTDSEGKMTLSVLLS
LTVLLIVLELIPSTSSAPVLGKYMFTMFIIVSSIIITVVVINTHRSPTHTMPO
WVRKIFDITIPNVMFFSTMKRASKENKIPADDIDISDICKQVGTGVIOTPLIK
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variation
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variation
variation
variation
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variation  
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ORIGIN 112 bases upstream of BglII site ([Nature 299, 793-797 (1982)]).

Query Match 56.2%; Score 354; DB 5; Length 2045;  
Best Local Similarity 72.8%; Pred. No. 3.9e-72;  
Matches 456; Conservative 0; Mismatches 170; Indels 0; Gaps 0;  
Qy 1 TCCGACATGAGACCCGCTCTGGTGGCAAGCTATTAAAGACTACAGACGGTGGTGGCG 60  
Db 259 TCTGAACATGAACACGTTGGTGGCTAAATTTATTAGAAAAATTAACAAGGTGATTGGT 318  
Qy 61 CCAGTGGAGACCCCGGCTGGTGGAGTCCAGCTACCGTGGCGCTGCAGCTGATACAGTTC 120  
Db 319 CCAGTGGAGACATCACCCCTTTGTAGATATTACAGTGGGGCTACAGCTGATACAACTC 378  
Qy 121 ATCAATGTGGATGAAGTAAATCAGATCGTGACAACTGCGCTCTGAAACAGCAATGG 180  
Db 379 ATCAGTGGATGAAGTAAATCAATTTGGNACAAATGTGGCTTAAGCGCAATGG 438  
Qy 181 GTGGATTACAACCTAAATGGAATCCAGATGACTATGGCGGTGTAACAAATTCACATT 240  
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Db 679 AATTGCACTATGAAGTGGGAATCTGGAGCTTGGAGTGGGACAAAAGTTTCCATATCCCCG 738  
Qy 481 GAAAGCAGCAGCAGCTGAGCAACTTTCATGGAGACGGGAGTGGGTGATCAAGGAG 540  
Db 739 GAAAGTACCGCTCCGGATCTCAGTACATTTATGAAGTGGAGATGGGTAAAGAT 798

Qy 541 TCCCGGGCTGGAAGACACTCCGTGACCTATTCTCTGCTGCCGACACCCCTTACCTGGAC 600  
Db 799 TATCGTGGATGAAGCACTGGGTGATTATACCTGCTCTCGACACTCTCTTACCTGGAT 858  
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Db 859 ATCAGCTACCACTTTTATCATGACGG 884  
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LOCUS Sequence 1 from patent US 6106840.  
DEFINITION AR106255  
ACCESSION AR106255  
VERSION AR106255.1 GI:12820785  
KEYWORDS  
SOURCE Unknown.  
ORGANISM Unknown.  
REFERENCE 1 (bases 1 to 1350)  
AUTHORS Clark, B.R., Sharma, S.D. and Lerch, B.L.  
TITLE MHC conjugates useful in ameliorating autoimmunity  
JOURNAL Patent: US 6106840-A 1 22-AUG-2000;  
FEATURES Location/Qualifiers  
source 1..1350  
BASE COUNT 384 a 241 c 287 g 438 t  
ORIGIN  
Query Match 55.7%; Score 350.8; DB 6; Length 1350;  
Best Local Similarity 72.5%; Pred. No. 2.1e-71;  
Matches 454; Conservative 0; Mismatches 172; Indels 0; Gaps 0;  
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Db 37 TCTGAACATGAAGACGTTGGTGGCTAAATTTATTAGAAAAATTAACAAGGTGATTGGT 96  
Qy 61 CCAGTGGAGACCCCGGCTGGTGGAGTCCAGCTACCGTGGCGCTGCAGCTGATACAGTTC 120  
Db 97 CCAGTGGAGACATCACACCCACTTTGTAGATATTACAGTGGGGCTACAGCTGATACACTC 156  
Qy 121 ATCAATGTGGATGAAGTAAATCAGATCGTGACAACTAATGCGTCTGAAACAGCAATGG 180  
Db 157 ATCAGTGGATGAAGTAAATCAATTTGTGAAACAAATGTGGCGCTTAAGCGCAATGG 216  
Qy 181 GTGGATTACAACCTAAATGGAATCCAGATGACTATGGCGGTGTAACAAATTCACATT 240  
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Qy 241 CCTTCAGAAAAGATCTGGCGCCAGACCTTGTCTCTATAACGATGCGATGGTGACTTTT 300  
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Qy 301 GCTATGTCAGATCTACCAAAAGTGTCTGTCAGTACACTGGCCACATCACGTGGACACT 360  
Db 337 GCCATTGTCATGACCAAACTGCTTTGGATTATACGGGAAAAATTAATGGACACT 396  
Qy 361 CCAGCATCTTTAAAGCTACTGTGAGATCATCGTACCCACTTTCCCTTTTGTATGAACAG 420  
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Db 457 AATTGCACTATGAAGTGGGAATCTGGACGTACGATGGGACAAAAGTTTCCATATCCCG 516  
Qy 481 GAAAGCAGCAGCAGCTGAGCAACTTTCATGGAGACGGGAGTGGGTGATCAAGGAG 540  
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Db 577 TATCGTGGATGAAGACACTGGGTGATTATACCTGCTCTGACACTCTCTTACCTGGAT 636

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QY 601 ATCACTACCACTTCGTCATGCAGCG 626
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Db 637 ATCACTACCACTTTTATCATGCAGCG 662

RESULT 14
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LOCUS T.marmorata acetylcholine receptor alpha-subunit mRNA, complete
DEFINITION
ACCESSION M25893
VERSION M25893.1 GI:213215
KEYWORDS acetylcholine receptor.
SOURCE T.marmorata electric organ, cDNA to mRNA.
ORGANISM Torpedo marmorata
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Chondrichthyes;
Elasmobranchii; Squalea; Hypnosqualea; Pristiogaster; Batoidae;
Torpediniformes; Torpedinidae; Torpedinidae; Torpedo.
REFERENCE 1 (bases 1 to 1815)
AUTHORS Devillers-Thiery, A., Giraudat, J., Bentabollet, M. and Changeux, J.P.
TITLE Complete mRNA coding sequence of the acetylcholine binding
alpha-subunit of Torpedo marmorata acetylcholine receptor: a model
for the transmembrane organization of the polypeptide chain
JOURNAL Proc. Natl. Acad. Sci. U.S.A. 80 (7), 2067-2071 (1983)
MEDLINE 83169822
PUBMED 5572962
REFERENCE 2 (bases 1 to 1815)
AUTHORS Devillers-Thiery, A., Giraudat, J., Bentabollet, M., Klarsfeld, A. and
Changeux, J.P.
TITLE Molecular genetics of Torpedo marmorata acetylcholine receptor
JOURNAL Adv. Exp. Med. Biol. 181, 17-29 (1984)
MEDLINE 85171452
PUBMED 6549423
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BASE COUNT 563 a 287 c 378 g 587 t
ORIGIN

Query Match 55.7%; Score 350.8; DB 5; Length 1815;
Best Local Similarity 72.5%; Pred. No. 2.2e-71;
Matches 454; Conservative 0; Mismatches 172; Indels 0; Gaps 0;

QY 1 TCCGAACATGAGACCCGCTCTGGTGGCAAGAGCTATTTAAAGACTACAGCGTGGTGGG 60
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Db 136 TCTGACATGAACACAGCTTTGGTGGCTAAATATATAGAAATATATACAGGATTCGT 195
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QY 61 CCAGTGAAGACACCCGCGAGGTGCGGAGGTACCGTGGCGCTGACGCTGATACAGCTC 120
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Db 196 CCAGTGGAGCATCACACCCACTTGTAGATATATACAGTGGGCTACAGCTGATACACTC 255
|||||

QY 121 ATCAATGTGATGAGTAATATGAGTCGTGACAAACCAATATGCGTCTGAACACATGG 180
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Db 256 ATCAATGTGATGAGTAATATCAAAATGTGGAACAAATGTGCGCTTAAGCGCAATGG 315
|||||

QY 181 GTGATTACAACTAAATCCAGATCACTATCGCGGTGTGAAAAAATTCACATT 240
|||||
Db 316 ATTGATGTAGGCTTCGCTGAAATCCAGCGGATATGTTGGAATTAATAAAGATCAGACT 375
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LLVIVELIPSSAVPLIGKYNLETFVFIASIIITVIVINTHRSPTHTMPWVRK  
IFETIPNMFSEKQPKQFAEEMDISHSGKLGPAAVTYQSPALKNPDV  
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IEMNQE"  
sig\_peptide 40.99  
mat\_peptide 100.1410  
/product="mature alpha subunit (AA 1-437)"  
BASE COUNT 409 a 309 c 291 g 412 t  
ORIGIN

Query Match		55.2%	Score 348;	DB 5;	Length 1421;
Best Local Similarity		72.1%;	Pred. No. 9,6e-71;		
Matches 453;		Conservative 0;	Mismatches 175;	Indels 0;	Gaps 0;
QY	2	CGGAACATGAGACCCGCTGTTGGCAAGCTATTTAAAGACTACAGCAGCGTGGTGGCGGC	61		
Db	101	CTGACCATGAACCTGCCTTATTTGGAGATCTGTTGCAAACTACAAAGTGGTTCGTC	160		
QY	62	CAGTGGAGACCCGCCAGGTCTGGAGGTCACCGTGGCGCTGCAGCTGATACAGCTCA	121		
Db	161	CTGTAGAACATATAAGGATCAAGTAGTGGTAACCTGTTGGACTTCAGCTCAGCTCA	220		
QY	122	TCAATGTGGATGAAGTAAATCAAGTCGTGACCAACCAATGTGGCTGTAAGAACAGCAATGG	181		
Db	221	TCACGTGGATGAAGTGAACCAATGTTTCAACAAATATCCGCCATAAACAGCAATGGC	280		
QY	182	TGGATTACAACCTAAATGGAATCCAGATGACTATGGGGTGTGAAATAATTCACATTC	241		
Db	281	GTGATGTTAACTCAAGTGGGACCCAGCAAAATATGGCGGTGTAAGAAATTCGAATTC	340		
QY	242	CTTCAGAAAGATCTGGGCCCGACACCTTGTTCTCTATAACGATGCAGATGGTGACTTTG	301		
Db	341	CTTCCAGTGCAGCTTTGGAGTCCAGATTTGGTTCTTTATAACAATGCAGATGGTGACTTTG	400		
QY	302	CTATTGTCAAGTTACCAAGTGTCTCTGACGTACACTGGCCACATCAGTGGACACCTC	361		
Db	401	CTATTCTCAGGACACTAAATCTCTCGGATACACTGGAAAGATTACATGGACACCCC	460		
QY	362	CAGCCATCTTTAAAGCTACTGTGAGATCATGTCACCCACCTTCCCTTTGATGAACAGA	421		
Db	461	CAGCAATTTTCAAAAGCTACTGTGAAATCATAGTCACATACTTCCGTTTGATCAGCAGA	520		
QY	422	ACTGCAGCATGAGCTGGCAGCTAGGACCTAGCAGCGCTCTGCTGGCCATCAACCCGG	481		
Db	521	ATTGCAGCATGAAGTTTGGCACTTGGACTTATGATGGAGCTTACTAGTTATAATCCAG	580		
QY	482	AAAGCGACCGACGACCTGAGCAACTTCATGGAGCGGGAGTGGTGTATCAAGGAGT	541		
Db	581	AGAGGACCGACCGACGATCTGAGCAACTTCATGGCGGAGTGGAGATGGATGAAGGACT	640		
QY	542	CCCGGGCTGGAAGCACTCCGTGACTATTCTGTCGCCCGACACCCCTACCTGGACA	601		
Db	641	ATCGTTGCTGGAAGCATTTGGGTTTATTATACCTGTTGCCAGATAAACCATATCTGATA	700		
QY	602	TCACCTACGACTTCGTCATGAGCGCCT	629		
Db	701	TCACCTACCATTTTGTCTACAAAGGCT	728		

Search completed: January 14, 2003, 16:10:36  
Job time : 3123 secs

Result No.	Query			ID	Description
	Score	Match	Length		
1	1096	95.9	457	1	Sequence 3, Appli
2	1096	95.9	457	3	Sequence 3, Appli
3	1096	95.9	458	3	Sequence 3, Appli
4	898	78.6	449	3	Sequence 2, Appli
5	898	78.6	449	4	Sequence 2, Appli
6	896	78.4	449	6	Sequence 2, Appli
7	888	77.7	449	6	Sequence 2, Appli
8	597.5	52.3	504	4	Sequence 4, Appli
9	595.5	52.1	504	2	Sequence 4, Appli
10	595.5	52.1	504	2	Sequence 4, Appli
11	595.5	52.1	504	3	Sequence 4, Appli
12	595.5	52.1	504	4	Sequence 4, Appli
13	594.5	52.0	497	1	Sequence 5, Appli
14	594.5	52.0	497	3	Sequence 5, Appli
15	594.5	52.0	497	3	Sequence 5, Appli
16	582.5	51.0	629	1	Sequence 6, Appli
17	582.5	51.0	629	3	Sequence 6, Appli
18	582.5	51.0	629	3	Sequence 6, Appli
19	576	50.4	468	4	Sequence 8, Appli
20	575.5	50.3	529	1	Sequence 2, Appli
21	575.5	50.3	529	4	Sequence 2, Appli
22	569.5	49.8	494	4	Sequence 10, Appli
23	567.5	49.7	510	1	Sequence 4, Appli
24	567.5	49.7	510	3	Sequence 4, Appli
25	564.5	49.4	511	3	Sequence 4, Appli
26	549	48.0	528	2	Sequence 2, Appli
27	549	48.0	528	2	Sequence 2, Appli

QY 61 VDYNLKNWPDYGGVKKIHIPSEKIWRPDLVLYNNADGFAIVKFTKVLQYTGHTITWP 120  
DB 81 VDYNLKNWPDYGGVKKIHIPSEKIWRPDLVLYNNADGFAIVKFTKVLQYTGHTITWP 140  
QY 121 PAIFKSYCEIIVTHFPFDEQNCMKLGTWYD-INTSDQDLSNFMESGEWIK 180  
DB 141 PAIFKSYCEIIVTHFPFDEQNCMKLGTWYD-INTSDQDLSNFMESGEWIK 180  
QY 181 SRGWKHSVTYSCCPDTPYLDITYHFVQMRL 210  
DB 201 ARGWKHWFYSCCPTTPYLDITYHFVQMRL 230

## RESULT 2

US-08-471-961-3  
; Sequence 3, Application US/084,1961  
; Patent No. 6100046  
; GENERAL INFORMATION:  
; APPLICANT: ELGOYHEN, ANA BELEN  
; APPLICANT: JOHNSON, DAVID S.  
; APPLICANT: BOULTER, JAMES R.  
; APPLICANT: HEINEMANN, STEPHEN F.  
; TITLE OF INVENTION: CLONING AND EXPRESSION OF A NOVEL  
; TITLE OF INVENTION: ACETYLCHOLINE-GATED ION CHANNEL RECEPTOR  
; NUMBER OF SEQUENCES: 8  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: GRAY CARY WARE & FREIDENRICH LLP  
; STREET: 4365 EXECUTIVE DRIVE, SUITE 1600  
; CITY: SAN DIEGO  
; STATE: CALIFORNIA  
; COUNTRY: USA  
; ZIP: 92121  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Floppy disk  
; COMPUTER: IBM PC compatible  
; OPERATING SYSTEM: PC-DOS/MS-DOS  
; SOFTWARE: PatentIn Release #1.0, Version #1.25  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/08/471,961  
; FILING DATE:  
; CLASSIFICATION:  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 08/278,635  
; FILING DATE: 21-JUL-1994  
; ATTORNEY/AGENT INFORMATION:  
; NAME: REITER, STEPHEN E.  
; REGISTRATION NUMBER: 31,192  
; REFERENCE/DOCKET NUMBER: P41 9771  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 619-677-1409  
; TELEFAX: 619-677-1465  
; INFORMATION FOR SEQ ID NO: 3:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 457 amino acids  
; TYPE: amino acid  
; TOPOLOGY: linear  
; MOLECULE TYPE: protein  
US-08-471-961-3

Query Match 95.9%; Score 1096; DB 3; Length 457;  
Best Local Similarity 94.8%; Pred. No. 1.6e-112;  
Matches 199; Conservative 6; Mismatches 5; Indels 0; Gaps 0;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQIQLINVDENVQIVTTNVRLLKQW 60  
DB 21 SEHETRLVAKLFEDYSSVVRPVEDHREIVQVTVGLQIQLINVDENVQIVTTNVRLLKQW 80  
QY 61 VDYNLKNWPDYGGVKKIHIPSEKIWRPDLVLYNNADGFAIVKFTKVLQYTGHTITWP 120  
DB 81 VDYNLKNWPDYGGVKKIHIPSEKIWRPDLVLYNNADGFAIVKFTKVLQYTGHTITWP 140  
QY 121 PAIFKSYCEIIVTHFPFDEQNCMKLGTWYDGSVVAINPESDQDLSNFMESGEWIK 180

DB 141 PAIFKSYCEIIVTHFPFDEQNCMKLGTWYDGSVVAINPESDQDLSNFMESGEWIK 200  
QY 181 SRGWKHSVTYSCCPDTPYLDITYHFVQMRL 210  
DB 201 ARGWKHWFYSCCPTTPYLDITYHFVQMRL 230  
RESULT 3  
US-08-464-258B-3  
; Sequence 3, Application US/08464258B  
; Patent No. 6013766  
; GENERAL INFORMATION:  
; APPLICANT: ELGOYHEN, ANA BELEN  
; APPLICANT: JOHNSON, DAVID S.  
; APPLICANT: BOULTER, JAMES R.  
; APPLICANT: HEINEMANN, STEPHEN F.  
; TITLE OF INVENTION: CLONING AND EXPRESSION OF A NOVEL  
; TITLE OF INVENTION: ACETYLCHOLINE-GATED ION CHANNEL RECEPTOR  
; NUMBER OF SEQUENCES: 8  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: GRAY CARY WARE & FREIDENRICH LLP  
; STREET: 4365 EXECUTIVE DRIVE, SUITE 1600  
; CITY: SAN DIEGO  
; STATE: CALIFORNIA  
; COUNTRY: USA  
; ZIP: 92121  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Floppy disk  
; COMPUTER: IBM PC compatible  
; OPERATING SYSTEM: PC-DOS/MS-DOS  
; SOFTWARE: PatentIn Release #1.0, Version #1.25  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/08/464,258B  
; FILING DATE: 06/05/95  
; CLASSIFICATION: 530  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 08/278,635  
; FILING DATE: 21-JUL-1994  
; ATTORNEY/AGENT INFORMATION:  
; NAME: REITER, STEPHEN E.  
; REGISTRATION NUMBER: 31,192  
; REFERENCE/DOCKET NUMBER: P41 9989  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 619-677-1409  
; TELEFAX: 619-677-1465  
; INFORMATION FOR SEQ ID NO: 3:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 458 amino acids  
; TYPE: amino acid  
; STRANDEDNESS: single  
; TOPOLOGY: linear  
US-08-464-258B-3

Query Match 95.9%; Score 1096; DB 3; Length 458;  
Best Local Similarity 94.8%; Pred. No. 1.6e-112;  
Matches 199; Conservative 6; Mismatches 5; Indels 0; Gaps 0;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQIQLINVDENVQIVTTNVRLLKQW 60  
DB 21 SEHETRLVAKLFEDYSSVVRPVEDHREIVQVTVGLQIQLINVDENVQIVTTNVRLLKQW 80  
QY 61 VDYNLKNWPDYGGVKKIHIPSEKIWRPDLVLYNNADGFAIVKFTKVLQYTGHTITWP 120  
DB 81 VDYNLKNWPDYGGVKKIHIPSEKIWRPDLVLYNNADGFAIVKFTKVLQYTGHTITWP 140  
QY 121 PAIFKSYCEIIVTHFPFDEQNCMKLGTWYDGSVVAINPESDQDLSNFMESGEWIK 180  
DB 141 PAIFKSYCEIIVTHFPFDEQNCMKLGTWYDGSVVAINPESDQDLSNFMESGEWIK 200  
QY 181 SRGWKHSVTYSCCPDTPYLDITYHFVQMRL 210  
DB 201 ARGWKHWFYSCCPTTPYLDITYHFVQMRL 230

193 'YRGWKHWVYVTCPPOTPYLDITYHFIMQRI 222

RESULT 5  
US-09-602-807-2  
; Sequence 2, Application US/09602807  
; Patent No. 6451314  
; GENERAL INFORMATION:  
; APPLICANT: Sharma, Somesh D.  
; APPLICANT: Clark, Brian R.  
; APPLICANT: Lerch, Bernard L.  
; TITLE OF INVENTION: MHC Conjugates Useful in Ameliorating  
; TITLE OF INVENTION: Autoimmunity  
; NUMBER OF SEQUENCES: 10  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Townsend and Townsend and Crew LLP  
; STREET: Two Embarcadero Center, Eighth Floor  
; CITY: San Francisco  
; STATE: California  
; COUNTRY: USA  
; ZIP: 94111-3834  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Floppy disk  
; COMPUTER: IBM PC compatible  
; OPERATING SYSTEM: PC-DOS/MS-DOS  
; SOFTWARE: PatentIn Release #1.0, Version #1.30  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/09/602,807  
; FILING DATE:  
; CLASSIFICATION:  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 08/462,351  
; FILING DATE:  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 07/576,084  
; FILING DATE: 30-AUG-1990  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 07/690,840  
; FILING DATE: 23-APR-1991  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 07/869,293  
; FILING DATE: 14-APR-1992  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Parent, Annette S.  
; REGISTRATION NUMBER: 42,058  
; REFERENCE/DOCKET NUMBER: 014058-000242US  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: (415) 576-0200  
; TELEFAX: (415) 576-0300  
; INFORMATION FOR SEQ ID NO: 2:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 449 amino acids  
; TYPE: amino acid  
; TOPOLOGY: linear  
; MOLECULE TYPE: protein

[illegible]

QY 181 SRGKHSVYSCCPDTPYLDITYHFVMQRL 210  
Db 193 YRGKHWVYTCPPDTPYLDITYHFIMORI 222

RESULT 6  
5468481-1  
; Patent No. 5468481  
; APPLICANT: SHARMA, SOMESH D.; CLARK, BRIAN R.; LERCH, BERNARD L.  
; TITLE OF INVENTION: MHC CLASS II-PEPTIDE CONJUGATES USEFUL  
; IN AMELIORATING AUTOIMMUNITY  
; NUMBER OF SEQUENCES: 7  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/07/869,293  
; FILING DATE: 14-APR-1992  
; PRIORITY APPLICATION DATA:  
; APPLICATION NUMBER: 690,840  
; FILING DATE: 23-APR-1991  
; APPLICATION NUMBER: 576,084  
; FILING DATE: 30-AUG-1990  
; APPLICATION NUMBER: 210,594  
; FILING DATE: 23-JUN-1988  
; APPLICATION NUMBER: 635,840  
; FILING DATE: 28-DEC-1998  
; APPLICATION NUMBER: 367,751  
; FILING DATE: 21-JUN-1989  
; SEQ ID NO: 1:  
; LENGTH: 449

5468481-1

Query Match  
Best Local Similarity 78.4%; Score 896; DB 6; Length 449;  
Matches 156; Conservative 26; Mismatches 28; Indels 0; Gaps 0;

QY 1 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQIQLINVDVNOIYVTTNVRKQOW 60  
Db 13 SEHETRLVANLLENKVRPVEHHTFVDITVGLQIQLISVDEVNOIYVETNVRKQOW 72  
QY 61 VDYNLKWNPDYGGVKKIHPSEKIWRPDLVLYNNADGDFAIYKFTKVLLOYTGHITWTP 120  
Db 73 IDVRLRNPDYGGIIRLPDSDVWLPLVLYNNADGDFAIYVHMTKLLDITGKIMWTP 132  
QY 121 PAIFKSYCEIIVTHFPFDEQNGSMKLGITWYDGSVVAINPESDQDPLSNFMESEGEWVKE 180  
Db 133 PAIFKSYCEIIVTHFPFQONCTMKLGITWYDGTKVSISPESDRDPLSTFMESEGEWVMD 192  
QY 181 SRGKHSVYSCCPDTPYLDITYHFVMQRL 210  
Db 193 YRGKHWVYTCPPDTPYLDITYHFIMORI 222

RESULT 8  
US-08-487-596-4  
; Sequence 4, Application US/08487596  
; Patent No. 6440681  
; GENERAL INFORMATION:  
; APPLICANT: Elliot, Kathryn J.  
; APPLICANT: Ellis, Steven B.  
; APPLICANT: Harpold, Michael M.  
; TITLE OF INVENTION: METHODS FOR IDENTIFYING AGONISTS AND  
; TITLE OF INVENTION: ANTAGONISTS FOR HUMAN NEURONAL  
; NUMBER OF SEQUENCES: 18  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Brown, Martin, Haller & McClain  
; STREET: 1660 Union Street  
; CITY: San Diego  
; STATE: CA  
; COUNTRY: USA  
; ZIP: 92101  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Floppy disk  
; COMPUTER: IBM PC compatible  
; OPERATING SYSTEM: PC-DOS/MS-DOS  
; SOFTWARE: Patent In Release #1.0, Version #1.25  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/08/487,596  
; FILING DATE: 07-JUN-1995  
; CLASSIFICATION: 435  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: WO US94/02447  
; FILING DATE: 08-MAR-1994  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 08/149,503  
; FILING DATE: 08-NOV-1993  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 08/028,031  
; FILING DATE: 08-MAR-1993  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 07/938,154  
; FILING DATE: 30-NOV-1992  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 07/504,455  
; FILING DATE: 03-APR-1990  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Seidman, Stephanie L.  
; REGISTRATION NUMBER: 33,779  
; REFERENCE/DOCKET NUMBER: 6362-9951  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 619-238-0999  
; TELEFAX: 619-238-0062  
; INFORMATION FOR SEQ ID NO: 4:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 504 amino acids  
; TYPE: amino acid  
; TOPOLOGY: unknown

QY 181 SRGKHSVYSCCPDTPYLDITYHFVMQRL 210  
Db 193 YRGKHWVYTCPPDTPYLDITYHFIMORI 222

RESULT 6  
5468481-1  
; Patent No. 5468481  
; APPLICANT: SHARMA, SOMESH D.; CLARK, BRIAN R.; LERCH, BERNARD L.  
; TITLE OF INVENTION: MHC CLASS II-PEPTIDE CONJUGATES USEFUL  
; IN AMELIORATING AUTOIMMUNITY  
; NUMBER OF SEQUENCES: 7  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/07/869,293  
; FILING DATE: 14-APR-1992  
; PRIORITY APPLICATION DATA:  
; APPLICATION NUMBER: 690,840  
; FILING DATE: 23-APR-1991  
; APPLICATION NUMBER: 576,084  
; FILING DATE: 30-AUG-1990  
; APPLICATION NUMBER: 210,594  
; FILING DATE: 23-JUN-1988  
; APPLICATION NUMBER: 635,840  
; FILING DATE: 28-DEC-1998  
; APPLICATION NUMBER: 367,751  
; FILING DATE: 21-JUN-1989  
; SEQ ID NO: 1:  
; LENGTH: 449

5468481-1

Query Match  
Best Local Similarity 77.7%; Score 888; DB 6; Length 449;  
Matches 155; Conservative 28; Mismatches 27; Indels 0; Gaps 0;

QY 1 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQIQLINVDVNOIYVTTNVRKQOW 60  
Db 13 SEHETRLVANLLENKVRPVEHHTFVDITVGLQIQLISVDEVNOIYVETNVRKQOW 72  
QY 61 VDYNLKWNPDYGGVKKIHPSEKIWRPDLVLYNNADGDFAIYKFTKVLLOYTGHITWTP 120  
Db 73 IDVRLRNPDYGGIIRLPDSDVWLPLVLYNNADGDFAIYVHMTKLLDITGKIMWTP 132  
QY 121 PAIFKSYCEIIVTHFPFDEQNGSMKLGITWYDGSVVAINPESDQDPLSNFMESEGEWVKE 180  
Db 133 PAIFKSYCEIIVTHFPFQONCTMKLGITWYDGTKVSISPESDRDPLSTFMESEGEWVMD 192  
QY 181 SRGKHSVYSCCPDTPYLDITYHFVMQRL 210  
Db 193 YRGKHWVYTCPPDTPYLDITYHFIMORI 222

RESULT 7  
4425-1  
; Patent No. 5194425  
; APPLICANT: SHARMA, SOMESH D.; LERCH, L. BERNARD; CLARK,  
; BRIAN R.  
; TITLE OF INVENTION: MHC-MEDIATED TOXIC CONJUGATES USEFUL IN  
; AMELIORATING AUTOIMMUNITY  
; NUMBER OF SEQUENCES: 9  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/07/367,751  
; FILING DATE: 21-JUN-1989  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 210,594  
; FILING DATE: 23-JUN-1988  
; SEQ ID NO: 1:  
; LENGTH: 449

5194425-1

Query Match  
Best Local Similarity 73.8%; Score 888; DB 6; Length 449;  
Matches 155; Conservative 28; Mismatches 27; Indels 0; Gaps 0;





QY 61 VDNKLNWPDYGGVKKIHIPSEKIRPDVLVNNADGDFAIKFTKVLQYTGHTWTP 120  
Db 91 XDYKLNWPDYGGVKKIHIPSEKIRPDVLVNNADGDFAIKFTKVLQYTGHTWTP 150  
QY 121 PAIFKSSCKIDYTFPPDYQNCMTKFGSWSDYKAKIDLVLGSSNMKLDYWGSEWAIK 210  
Db 151 PAIFKSSCKIDYTFPPDYQNCMTKFGSWSDYKAKIDLVLGSSNMKLDYWGSEWAIK 180  
QY 181 SRGKHSVTVSCCPDTPYLDITYHFVMQRL 210  
Db 211 APGYNHDIKYNCCBEI-YPDITYSLIIRRL 239

RESULT 11  
US-08-467-574-4  
; Sequence 4, Application US/08467574  
; Patent No. 6022704  
; GENERAL INFORMATION:  
; APPLICANT: Elliot, Kathryn J.  
; APPLICANT: Ellis, Steven B.  
; APPLICANT: Harpold, Michael M.  
; TITLE OF INVENTION: HUMAN NEURONAL NICOTINIC ACETYLCHOLINE  
; NUMBER OF SEQUENCES: 12  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Brown, Martin, Haller & McClaim  
; STREET: 1660 Union Street  
; CITY: San Diego  
; STATE: CA  
; COUNTRY: USA  
; ZIP: 92101-2926  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Diskette  
; OPERATING SYSTEM: DOS  
; SOFTWARE: FastSeq Version 1.5  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/08/467,574  
; FILING DATE: June 5, 1995  
; CLASSIFICATION: 536  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 08/028,031  
; FILING DATE: March 8, 1993  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Seidman, Stephanie L  
; REGISTRATION NUMBER: 33,779  
; REFERENCE/DOCKET NUMBER: 6362-9949  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 619-238-0999  
; TELEFAX: 619-238-0062  
; TELEX:  
; INFORMATION FOR SEQ ID NO: 4:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 504 amino acids  
; TYPE: amino acid  
; STRANDEDNESS: single  
; TOPOLOGY: unknown  
; MOLECULE TYPE: protein  
US-08-467-574-4

Query Match 52.1%; Score 595.5; DB 3; Length 504;  
Best Local Similarity 50.5%; Pred. No. 2.8e-57;  
Matches 106; Conservative 42; Mismatches 61; Indels 1; Gaps 1;  
QY 1 SEHETRLVAKLFKDYSSVRPVEDHROVVEVTAGLQLIQLINDEVNQIVTNNVRLKQOW 60  
Db 31 SEAHRLFLERLFEDYNEIRPVANVSDPVIHFVMSQLVKVDEVNQIMETNLWLKQIW 90  
QY 61 VDNKLNWPDYGGVKKIHIPSEKIRPDVLVNNADGDFAIKFTKVLQYTGHTWTP 120  
Db 91 XDYKLNWPDYGGVKKIHIPSEKIRPDVLVNNADGDFAIKFTKVLQYTGHTWTP 150  
QY 121 PAIFKSSCKIDYTFPPDYQNCMTKFGSWSDYKAKIDLVLGSSNMKLDYWGSEWAIK 210  
Db 211 APGYNHDIKYNCCBEI-YPDITYSLIIRRL 239

Db 151 PAIFKSSCKIDYTFPPDYQNCMTKFGSWSDYKAKIDLVLGSSNMKLDYWGSEWAIK 210  
QY 181 SRGKHSVTVSCCPDTPYLDITYHFVMQRL 210  
Db 211 APGYNHDIKYNCCBEI-YPDITYSLIIRRL 239

RESULT 12  
US-09-217-345-4  
; Sequence 4, Application US/09217345  
; Patent No. 6303753  
; GENERAL INFORMATION:  
; APPLICANT: Elliot, Kathryn J.  
; APPLICANT: Ellis, Steven B.  
; APPLICANT: Harpold, Michael M.  
; TITLE OF INVENTION: HUMAN NEURONAL NICOTINIC ACETYLCHOLINE  
; NUMBER OF SEQUENCES: 12  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Heller Ehrman White & McAuliffe  
; STREET: 4250 Executive Square, 7th Floor  
; CITY: La Jolla  
; STATE: CA  
; COUNTRY: USA  
; ZIP: 92037  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Diskette  
; OPERATING SYSTEM: DOS  
; SOFTWARE: FastSeq Version 1.5  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/09/217,345  
; FILING DATE: 21-DEC-98  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 08/467,574  
; FILING DATE: 05-JUN-95  
; APPLICATION NUMBER: US 08/466,589,  
; FILING DATE: 05-JUN-95  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 08/028,031  
; FILING DATE: 08-MAR-93  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Seidman, Stephanie L  
; REGISTRATION NUMBER: 33,779  
; REFERENCE/DOCKET NUMBER: 24735-9949B  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 619-450-8400  
; TELEFAX: 619-587-5360  
; TELEX:  
; INFORMATION FOR SEQ ID NO: 4:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 504 amino acids  
; TYPE: amino acid  
; STRANDEDNESS: single  
; TOPOLOGY: unknown  
; MOLECULE TYPE: protein  
US-09-217-345-4

Query Match 52.1%; Score 595.5; DB 4; Length 504;  
Best Local Similarity 50.5%; Pred. No. 2.8e-57;  
Matches 106; Conservative 42; Mismatches 61; Indels 1; Gaps 1;  
QY 1 SEHETRLVAKLFKDYSSVRPVEDHROVVEVTAGLQLIQLINDEVNQIVTNNVRLKQOW 60  
Db 31 SEAHRLFLERLFEDYNEIRPVANVSDPVIHFVMSQLVKVDEVNQIMETNLWLKQIW 90  
QY 61 VDNKLNWPDYGGVKKIHIPSEKIRPDVLVNNADGDFAIKFTKVLQYTGHTWTP 120  
Db 91 XDYKLNWPDYGGVKKIHIPSEKIRPDVLVNNADGDFAIKFTKVLQYTGHTWTP 150  
QY 121 PAIFKSSCKIDYTFPPDYQNCMTKFGSWSDYKAKIDLVLGSSNMKLDYWGSEWAIK 210  
Db 211 APGYNHDIKYNCCBEI-YPDITYSLIIRRL 239

## RESULT 14

US-08-471-961-5  
; Sequence 5, Application US/08471961  
; Patent No. 6100046  
; GENERAL INFORMATION:  
; APPLICANT: ELGOYHEN, ANA BELEN  
; APPLICANT: JOHNSON, DAVID S.

Search completed: January 14, 2003, 16:59:09  
Job time : 38 secs

GenCore version 5.1.3  
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OM nucleic - nucleic search, using sw model

Run on: January 14, 2003, 12:20:37 ; Search time 300 Seconds  
(without alignments)  
4729.196 Million cell updates/sec

Title: US-09-820-339A-1  
Perfect score: 630  
Sequence: 1 tccgaacatgagaccctct.....acttgctcatgcagcgctg 630

Scoring table: IDENTITY\_NUC  
Gapop 10.0 , Gapext 1.0

Searched: 2185239 seqs, 1125999159 residues  
Total number of hits satisfying chosen parameters: 4370478

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000  
Post-processing: Minimum Match 0%  
Maximum Match 100%  
Listing first 45 summaries

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24:	/SID22/gcgdata/geneseq/geneseq-emb1/NA2002.DAT:*			

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match %	Length	ID	Description
1	628.4	99.7	1667	21	AAZ38821 Human acetylcholin
2	564.4	89.6	3649	6	AAZ50416 Calf acetyl cholin
3	545	86.5	705	19	AAV72829 Human acetylcholin
4	530	84.1	690	19	AAV72830 Human acetylcholin
5	363	57.6	363	19	AAV72831 Human acetylcholin
6	354	56.2	1350	17	AAO6284 Acetylcholine rece
7	353.6	56.1	1350	14	AAQ39941 Acetylcholine rece
8	352.4	55.9	1350	14	AAQ35053 Alpha subunit of T
9	326.6	51.8	1350	15	AAQ56918 Acetylcholine rece

10	278	44.1	438	19	AAV72832 Human acetylcholin
11	267	42.4	267	19	AAV72833 Human acetylcholin
12	224.2	35.6	2277	15	AAV12199 Human neuronal nic
13	224.2	35.6	2277	16	AAQ90387 Alpha 2 subunit of
14	224.2	35.6	2664	18	AAT48235 Neuronal nicotinic
15	224.2	35.6	2664	24	ABK92165 Prostate cancer-as
16	223.6	35.5	1908	18	AAT48236 Neuronal nicotinic
17	223.2	35.4	1757	15	AAV12200 Human neuronal nic
18	217.8	34.6	2082	18	AAT59527 Alpha4 subunit of
19	217.8	34.6	2082	18	AAT59528 Alpha4 subunit of
20	217.8	34.6	3496	18	AAT48237 Neuronal nicotinic
21	216.2	34.3	1809	23	AAAS91552 DNA encoding novel
22	208.2	33.0	2363	15	AAV12196 Human neuronal nic
23	200.2	31.8	4708	6	AAAS0415 Human acetyl choli
24	193.8	30.8	1869	24	AAAL45873 Modified acetylcho
25	193.8	30.8	1869	24	ABL54794 Modified hen ACR s
26	184.4	29.3	2210	23	ABL10275 Drosophila melanog
27	182.6	29.0	2385	23	ABL11821 Drosophila melanog
28	179.8	28.5	1743	18	AAT48232 Neuronal nicotinic
29	179.2	28.4	1509	22	AAAS15343 Human CHRNA2 codin
30	179.2	28.4	1771	24	AAAD26345 Human neuronal neu
31	179.2	28.4	2448	15	AAV12201 Human neuronal nic
32	179.2	28.4	2448	18	AAT48240 Neuronal nicotinic
33	178	28.3	1377	22	AAAD20828 Human CHRNA3 gene
34	178	28.3	1925	18	AAT48234 Neuronal nicotinic
35	177.6	28.2	1521	12	AAQ14288 Human neuronal nic
36	176.2	28.0	1869	24	AAAL45864 Modified acetylcho
37	176.2	28.0	1869	24	ABL54788 Insect nicotinic A
38	175.6	27.9	1938	17	AAQ99348 Alpha-9 nicotinic
39	173.4	27.5	1828	18	AAT48238 Neuronal nicotinic
40	173.2	27.5	2319	23	ABL04391 Drosophila melanog
41	168.4	26.7	1677	24	AAAD33651 Human TRICH-6 cDNA
42	168.4	26.7	1932	22	AAAD03528 Human nicotinic ac
43	167	26.5	1896	24	AAAL45870 Modified acetylcho
44	167	26.5	1896	24	ABL54791 Modified hen ACR s
45	166.8	26.5	1299	22	AAAS01279 Mature alpha nicot

ALIGNMENTS

RESULT 1	
AAZ38821	AAZ38821 standard; cDNA; 1667 BP.
ID	AAZ38821 standard; cDNA; 1667 BP.
XX	AAZ38821;
AC	AC
XX	14-FEB-2000 (first entry)
DT	Human acetylcholine receptor nucleotide sequence.
XX	Human; acetylcholine receptor; AChR; immune response; allergy;
DE	Human; antibody-mediated disease; gene replacement therapy; T cell epitope;
XX	KW: dermatological; immunosuppressive; antiinflammatory; haemostatic;
XX	KW: antianemic; antiallergic; antidiabetic; antithyroid; antidiabetic;
XX	KW: autoimmune disease; allergic disease; ss.
OS	Homo sapiens.
XX	Key
XX	Location/Qualifiers
FT	49..1422
FT	/*tag= a
FT	/product= "acetylcholine receptor"
XX	XX
PN	WO9930736-A2.
XX	XX
PD	24-JUN-1999.
XX	XX
PF	16-DEC-1998; 98WO-US26787.
XX	XX
PR	16-DEC-1997; 97US-0991143.
XX	XX
PA	(MINU ) UNIV MINNESOTA.



QY 241 CCTTCAGAAAGATCTGGCCGACGACCTTGTCTCTATACGATGAGATGGTACTTT 300  
 DB 347 CCTTCGAAAAGATCTGGCCGACGACCTGTTCTTTTATAACATGAGATGGTACTTT 406  
 QY 301 GCTATTGCTCAAGTTACCAAGTCTCTCGAGTACACTGGCCACATCAGTGGACACT 360  
 DB 407 GCATCTGCTCAAGTTACCAAGTCTCTCGAGTACACTGGCCACATCAGTGGACACT 466  
 QY 361 CCAGCCATCTTTAAAGCTACTGTGAGATCATCGTCAACCCACTTCCCTTTGATGAACAG 420  
 DB 467 CTTGCCATCTTTAAAGCTACTGTGAGATCATCGTCAACCCACTTCCCTTTGATGAACAG 526  
 QY 421 AACTGACGATGAGCTGGCCACTGACCTACGACCGCTCTGTCGGCCATCAACCCG 480  
 DB 527 AACTGACGATGAGCTGGCCACTGACCTACGACCGCTCTGTCGGCCATCAACCCG 586  
 QY 481 GAAAGCCAGCAGCAGACCTGAGCAACTTCATGGAGAGCGGGAGTGGTGTATCAAGGAG 540  
 DB 587 GAAAGCCAGCAGCAGACCTGAGCAACTTCATGGAGAGCGGGAGTGGTGTATCAAGGAG 646  
 QY 541 TCCGGGGCTGGAGAGCACTCGTGACCTATTCCTGTGCGCCGACACCCCTACCTGGAC 600  
 DB 647 TCGGGGGCTGGAGAGCACTCGTGAGTCTTATGCGGTGCTGCCCTCCACCCCTACCTGGAC 706  
 QY 601 ATACCTTACCACCTTCGTATGACGCGCTG 630  
 DB 707 ATACCTTACCACCTTCGTATGACGCGCTG 736

## RESULT 3

AAV72829

ID AAV72829 standard; DNA; 705 BP.

XX AC AAV72829;

XX AC AAV72829;  
 DT 19-FEB-1999 (first entry)

DE Human acetylcholine receptor alpha-subunit variant 1 encoding DNA.

XX KW Human; acetylcholine receptor alpha-subunit; hAChR; variant;  
 KW myasthenia gravis; autoimmune response; neuromuscular disorder;  
 diagnosis; ss.

XX OS Homo sapiens.  
 OS Synthetic.

XX WO9850544-A1.  
 12-NOV-1998.

XX 06-MAY-1998; 98WO-1100211.  
 07-MAY-1997; 97IL-0120792.

XX (YEDA ) YEDA RES & DEV CO LTD.  
 Barchan D, Fuchs S, Souroujon MC;

XX WPI: 1998-610383/51.  
 P-PSDB; AAW83381.

XX Poly:peptide(s) modulating auto:immune response to acetyl:choline  
 receptor - comprise all or part of extracellular domain of human  
 acetyl:choline receptor alpha-sub:unit, useful in treatment and  
 diagnosis of myasthenia gravis  
 Claim 91; Fig -; 58pp; English.

XX The present sequence encodes a human acetylcholine receptor (hAChR)  
 alpha-subunit variant which is used as all or part of a protein for  
 CC modulating the autoimmune response of an individual to hAChR. The  
 CC protein can be administered to alleviate and/or treat myasthenia gravis

CC (MG), and is useful for diagnosing the condition. It can be combined  
 CC with a suitable carrier in pharmaceutical compositions, and is useful  
 CC for such therapeutic (especially nasal or oral) administration and  
 CC diagnosis. MG is a human neuromuscular disorder, in which autoantibodies  
 CC against AChR bind to the receptor and interfere with signal transmission  
 CC from nerve to muscle at the neuromuscular junction. The extracellular  
 CC domain of the AChR alpha-subunit appears to be the prime target for  
 CC these autoantibodies, particularly the main immunogenic region (MIR).  
 CC The protein enables antigen-specific immunotherapy which suppresses only  
 CC adverse autoimmune responses whilst leaving overall immune system  
 CC intact, unlike current methods of treating MG using immunosuppressive  
 CC drugs e.g. steroids.  
 CC N.B. The present sequence is not given in the specification but has been  
 CC created by the indexer as specified in the claim using the sequences  
 CC given in the figures.

XX Sequence 705 BP; 177 A; 192 C; 181 G; 155 T; 0 other;

Query Match 86.58; Score 545; DB 19; Length 705;

Best Local Similarity 89.48; Pred. No. 1.7e-137;

Matches 630; Conservative 0; Mismatches 0; Indels 75; Gaps 1;

QY 1 TCCGAACATGAGACCCGCTCTGGTGGCAAGCTATTAAAGACTACAGCAGCGTGGTGGG 60

DB 1 TCCGAACATGAGACCCGCTCTGGTGGCAAGCTATTAAAGACTACAGCAGCGTGGTGGG 60

QY 61 CCAGTGAAGACACCCGCGAGGTCTGAGAGTCAACCGTGGCCCTGCAGCTGATACAGCTC 120

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QY 121 ATCAATGTGATGAAGTAAATCAGATCGTGACACCAATGTGGCTGTGAAC----- 172

DB 121 ATCAATGTGATGAAGTAAATCAGATCGTGACACCAATGTGGCTGTGAAC----- 180

QY 173 ----- 172

DB 181 ATGATGATGTGCCACGCCCGCAGCTGCTGTGGAGTTCCTTTGGATCTCATCTG 240

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DB 241 CAGGATGAGCAATGGTGGATTACAACCTAAATGAATCCAGATGACTATGGGGTGTG 300

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QY 286 GCAGATGGTACTTTGCTATTGTCAAGTTCACCAAGTTCCTCGCAGTACACTGGCCAC 345

DB 361 GCAGATGGTACTTTGCTATTGTCAAGTTCACCAAGTTCCTCGCAGTACACTGGCCAC 420

QY 346 ATCAGTGGACACCTCCAGCCATCTTTAAAGCTACTGTGAGATCATCGTCACCCACTTT 405

DB 421 ATCAGTGGACACCTCCAGCCATCTTTAAAGCTACTGTGAGATCATCGTCACCCACTTT 480

QY 406 CCCTTTGATGAACAGAACTGAGCATGAAGCTGGGACCTGGAGCCTAGGAGCGTCTGTCT 465

DB 481 CCCTTTGATGAACAGAACTGAGCATGAAGCTGGGACCTGGAGCCTAGGAGCGTCTGTCT 540

QY 466 GTGGCCATCAACCCGGAAGCGACCCAGACCTGAGCACTTCATGGAGAGCGGGAG 525

DB 541 GTGGCCATCAACCCGGAAGCGACCCAGACCTGAGCACTTCATGGAGAGCGGGAG 600

QY 526 TGGTGTATCAAGAGTCCCGGGCTGGAAGCAGTCCCGTGACCTATTCTGTGCCCCGAC 585

DB 601 TGGTGTATCAAGAGTCCCGGGCTGGAAGCAGTCCCGTGACCTATTCTGTGCCCCGAC 660

QY 586 ACCCCCTTACCTGGACATCACTACCTTCTGTATGAGCGCGCTG 630

DB 661 ACCCCCTTACCTGGACATCACTACCTTCTGTATGAGCGCGCTG 705

## RESULT 4

AAV72830

ID AAV72830 standard; DNA; 690 BP.  
 AC AAV72830;  
 XX  
 XX 19-FEB-1999 (first entry)  
 XX  
 XX Human acetylcholine receptor alpha-subunit variant 2 encoding DNA.  
 XX  
 XX Human; acetylcholine receptor alpha-subunit; hAChR; variant;  
 KW myasthenia gravis; autoimmune response; neuromuscular disorder;  
 KW diagnosis; ss.  
 XX  
 OS Homo sapiens.  
 OS Synthetic.  
 OS  
 PN WO9850544-A1.  
 XX  
 XX 12-NOV-1998.  
 PD  
 XX  
 XX 06-MAY-1998; 98WO-IL00211.  
 PF  
 XX 07-MAY-1997; 97IL-0120792.  
 XX  
 XX (YEDA ) YEDA RES & DEV CO LTD.  
 PA Barchan D, Fuchs S, Souroujon MC;  
 XX  
 XX WPI; 1998-610383/51.  
 DR P-PSDB; AAW83382.  
 XX  
 XX Poly:peptide(s) modulating auto:immune response to acetyl:choline  
 PT receptor - comprise all or part of extracellular domain of human  
 PT acetyl:choline receptor alpha-sub:unit, useful in treatment and  
 PT diagnosis of myasthenia gravis  
 XX  
 XX Claim 9ii; Fig -: 58pp; English.  
 XX  
 CC The present sequence encodes a human acetylcholine receptor (hAChR)  
 CC alpha-subunit variant which is used as all or part of a protein for  
 CC modulating the autoimmune response of an individual to hAChR. The  
 CC protein can be administered to alleviate and/or treat myasthenia gravis  
 CC (MG), and is useful for diagnosing the condition. It can be combined  
 CC with a suitable carrier in pharmaceutical compositions, and is useful  
 CC for such therapeutic (especially nasal or oral) administration and  
 CC diagnosis. MG is a human neuromuscular disorder, in which autoantibodies  
 CC against AChR bind to the receptor and interfere with signal transmission  
 CC from nerve to muscle at the neuromuscular junction. The extracellular  
 CC domain of the AChR alpha-subunit appears to be the prime target for  
 CC these autoantibodies, particularly the main immunogenic region (MIR).  
 CC The protein enables antigen-specific immunotherapy which suppresses only  
 CC adverse autoimmune responses whilst leaving overall immune system  
 CC intact, unlike current methods of treating MG using immunosuppressive  
 CC drugs e.g. steroids.  
 CC N.B. The present sequence is not given in the specification but has been  
 CC created by the indexer as specified in the claim using the sequences  
 CC given in the figures.  
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 SQ Sequence 690 BP; 175 A; 187 C; 176 G; 152 T; 0 other;  
 Query Match 84.1%; Score 530; DB 19; Length 690;  
 Best Local Similarity 89.1%; Pred. No. 1.9e-133;  
 Matches 615; Conservative 0; Mismatches 0; Indels 75; Gaps 1;  
 QY 1 TCCGAACATGAGACCCGCTCTGGTGCAGAGCTATTAAAGACTACAGACGCTGGTGGG 60  
 DB 1 TCCGAACATGAGACCCGCTCTGGTGCAGAGCTATTAAAGACTACAGACGCTGGTGGG 60  
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 DB 61 CCAGTGGGAAGACACCCGCCAGGCTGTGGAGTACCGTGGCGCTGCAGCTGATACAGTCT 120  
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DB 121 ATCAATGTGGATGAAGTAAATCAGATCGTGACAACTATGTGCGTCTGAAACAGGGTGAC 180  
 QY 173 ----- 172  
 DB 181 ATGTTAGATCTGCCACGCCCGCTGCGTACTTTGGGAGTTCCCTTTCTCATCTG 240  
 QY 173 -----AGCAATGGTGGATTACAACTAAATGGAATCCAGATGACTATGGCGGTGG 225  
 DB 241 CAGGATGAGCAATGGTGGATTACAACTAAATGGAATCCAGATGACTATGGCGGTGG 300  
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 DB 301 AAAAAAATTCACATTCCTTCAGAAAAGATCTGGCCCCCAGACCTTGTCTCTATAACGAT 360  
 QY 286 GCAGATGTGACTTTGTCTATTGTCAAGTTTCAACAAAGTCTCCTGCAGTACACTGGCCAC 345  
 DB 361 GCAGATGTGACTTTGTCTATTGTCAAGTTTCAACAAAGTCTCCTGCAGTACACTGGCCAC 420  
 QY 346 ATCAGTGGACACCTCCAGCCATCTTTAAAGCTACTGTGAGATCATCTGCACCCACTTT 405  
 DB 421 ATCAGTGGACACCTCCAGCCATCTTTAAAGCTACTGTGAGATCATCTGCACCCACTTT 480  
 QY 406 CCTTTGATGAACAGACTGCAGCATGAAGCTGGGCACCTGGACCTAGACGGCTCTGTC 465  
 DB 481 CCTTTGATGAACAGACTGCAGCATGAAGCTGGGCACCTGGACCTAGACGGCTCTGTC 540  
 QY 466 GTGGCCATCAACCCGGAAGCGACCCAGCAGACCTTGAGCAACTTTCATGGAGAGCGGGAG 525  
 DB 541 GTGGCCATCAACCCGGAAGCGACCCAGCAGACCTTGAGCAACTTTCATGGAGAGCGGGAG 600  
 QY 526 TGGTGTGATCAAGGAGTCCCGGGGCTGGAAGCAGCTCCGTGACCTATTCCTGTGCCCCGAC 585  
 DB 601 TGGTGTGATCAAGGAGTCCCGGGGCTGGAAGCAGCTCCGTGACCTATTCCTGTGCCCCGAC 660  
 QY 586 ACCCCCTACTTGGACATCACCCTTTC 615  
 DB 661 ACCCCCTACTTGGACATCACCCTTTC 690  
 RESULT 5  
 AAV72831  
 ID AAV72831 standard; DNA; 363 BP.  
 XX AC AAV72831;  
 XX  
 XX 19-FEB-1999 (first entry)  
 XX  
 XX Human acetylcholine receptor alpha-subunit variant 3 encoding DNA.  
 XX  
 KW Human; acetylcholine receptor alpha-subunit; hAChR; variant;  
 KW myasthenia gravis; autoimmune response; neuromuscular disorder;  
 KW diagnosis; ss.  
 XX  
 OS Homo sapiens.  
 OS Synthetic.  
 OS  
 PN WO9850544-A1.  
 XX  
 XX 12-NOV-1998.  
 PD  
 XX 06-MAY-1998; 98WO-IL00211.  
 PF  
 XX 07-MAY-1997; 97IL-0120792.  
 XX  
 XX (YEDA ) YEDA RES & DEV CO LTD.  
 PA Barchan D, Fuchs S, Souroujon MC;  
 XX  
 XX WPI; 1998-610383/51.  
 DR P-PSDB; AAW83383.  
 XX  
 XX Poly:peptide(s) modulating auto:immune response to acetyl:choline  
 PT receptor - comprise all or part of extracellular domain of human











DE Human acetylcholine receptor alpha-subunit variant 5 encoding DNA.  
XX  
KW Human; acetylcholine receptor alpha-subunit; hAChR; variant;  
KW myasthenia gravis; autoimmune response; neuromuscular disorder;  
diagnosis; ss.  
OS Homo sapiens.  
OS Synthetic.  
XX  
XX WO980544-A1.  
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XX 12-NOV-1998.  
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XX 06-MAY-1998; 98WO-IL00211.  
XX  
XX 07-MAY-1997; 97IL-0120792.  
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XX (YEDA ) YEDA RES & DEV CO LTD.  
XX  
XX Barchan D, Fuchs S, Souroujon MC;  
DR WPI; 1998-610383/51.  
DR P-PSDB; AAW83385.  
XX  
XX Poly:peptide(s) modulating auto:immune response to acetyl:choline  
receptor - comprise all or part of extracellular domain of human  
acetyl:choline receptor alpha-sub:unit, useful in treatment and  
diagnosis of myasthenia gravis  
XX  
XX Claim 9v; Fig -; 58pp; English.  
XX  
XX The present sequence encodes a human acetylcholine receptor (hAChR)  
alpha-subunit variant which is used as all or part of a protein for  
modulating the autoimmune response of an individual to hAChR. The  
protein can be administered to alleviate and/or treat myasthenia gravis  
(MG), and is useful for diagnosing the condition. It can be combined  
with a suitable carrier in pharmaceutical compositions, and is useful  
for such therapeutic (especially nasal or oral) administration and  
diagnosis. MG is a human neuromuscular disorder, in which autoantibodies  
against AChR bind to the receptor and interfere with signal transmission  
from nerve to muscle at the neuromuscular junction. The extracellular  
domain of the AChR alpha-subunit appears to be the prime target for  
these autoantibodies, particularly the main immunogenic region (MIR).  
The protein enables antigen-specific immunotherapy which suppresses only  
adverse autoimmune responses whilst leaving overall immune system  
intact, unlike current methods of treating MG using immunosuppressive  
drugs e.g. steroids.  
XX N.B. The present sequence is not given in the specification but has been  
created by the indexer as specified in the claim using the sequences  
given in the figures.  
XX  
XX Sequence 267 BP; 61 A; 86 C; 68 G; 52 T; 0 other;  
Query Match 42.4%; Score 267; DB 19; Length 267;  
Best Local Similarity 100.0%; Pred. No. 1.9e-62;  
Matches 267; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
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XX 364 GCCATCTTTAAAGTACTGTGAGATCATCGTCACCCATTTCCCTTTTCATGACAGAAC 423  
DB 1 GCCATCTTTAAAGTACTGTGAGATCATCGTCACCCATTTCCCTTTTCATGACAGAAC 60  
XX  
XX 424 TGCAGATGAAGCTGGGACCTGGACCTACGACGGCTCTGTCTGGCCATCAACCCGGAA 483  
DB 61 TGCAGATGAAGCTGGGACCTGGACCTACGACGGCTCTGTCTGGCCATCAACCCGGAA 120  
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XX 484 ACGGACCCAGCAGCTGAGCAACTTCATGGAGAGGGGAGTGGTGATCAAGGATCC 543  
DB 121 ACGGACCCAGCAGCTGAGCAACTTCATGGAGAGGGGAGTGGTGATCAAGGATCC 180  
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XX 544 CGGGGCTGAAGCACTCCGTGACCTATTCTGCTGCCCGACACCCCTACCTGGACATC 603  
DB 181 CGGGGCTGAAGCACTCCGTGACCTATTCTGCTGCCCGACACCCCTACCTGGACATC 240

QY 604 ACCTACCACTTCGTCTATGCGAGCGCCTG 630  
DB 241 ACCTACCACTTCGTCTATGCGAGCGCCTG 267  
RESULT 12  
AAV12199  
ID AAV12199 standard; cDNA; 2277 BP.  
XX  
XX AAV12199;  
XX  
XX 14-MAY-1998 (first entry)  
XX  
XX Human neuronal nicotinic acetylcholine receptor alpha-2 subunit cDNA.  
KW Human; neuronal nicotinic acetylcholine receptor; alpha-2 subunit;  
KW brain tissue; screening; NACHR; antibody; ds.  
XX  
XX Homo sapiens.  
XX  
XX Key Location/Qualifiers  
FH 166..1755  
CDS /\*tag= a  
FT /\*product= "neuronal nicotinic acetylcholine receptor  
alpha-2 subunit"  
XX  
XX WO9420617-A2.  
XX  
XX 15-SEP-1994.  
XX  
XX 08-MAR-1994; 94WO-US02447.  
XX  
XX 08-MAR-1993; 93US-0028031.  
XX  
XX (SALK ) SALK INST BIOTECHNOLOGY IND ASSOC.  
XX (SIBI-) SIBIA NEUROSCIENCES INC.  
XX  
XX Elliott KJ, Ellis SB, Harpold MW;  
XX WPI; 1994-303024/37.  
XX P-PSDB; AAW44155.  
XX  
XX Human neuronal nicotinic acetylcholine receptor subunits and DNA -  
PT also transformed cells useful for screening cpds. which modulate  
PT activity of the receptor  
XX  
XX Disclosure; Page 67-68; 99pp; English.  
XX  
XX The present sequence encodes a human neuronal nicotinic acetylcholine  
receptor (NACHR) subunit. The cells expressing the alpha and/or beta  
NACHR subunits may be used in a method of screening compounds to  
identify any which modulate the activity of human neuronal NACHR.  
XX Subunit specific antibodies may be used to monitor the distribution  
and expression density of various subunits in normal vs diseased brain  
tissues. Testing of single receptor subunits or specific receptor  
XX subunit combinations with a variety of potential agonists or antagonists  
provides information with respect to the function and activity of the  
XX individual subunits and should lead to the identification and design of  
compounds that are capable of very specific interaction with one or  
XX more receptor subtypes. The resulting drugs should exhibit fewer  
unwanted side effects than drugs identified e.g. screening with cells  
XX that express a variety of subtypes.  
XX  
XX Sequence 2277 BP; 451 A; 695 C; 643 G; 486 T; 2 other;  
Query Match 35.6%; Score 224.2; DB 15; Length 2277;  
Best Local Similarity 60.9%; Pred. No. 1.6e-50;  
Matches 383; Conservative 0; Mismatches 243; Indels 3; Gaps 1;  
XX  
XX 2 CCGACATGAGACCCCTCTGGTGGCAAGCTATTTAAAGCTACACGACGCTGGTGGCG 61  
DB 332 CCGACATGAGACCCGCTCTTCAAAACACCTCTTCCGGGGCTACAAACCGCTGGCGCGC 391



GenCore version 5.1.3  
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OM nucleic - nucleic search, using sw model

Run on: January 14, 2003, 15:11:07 ; Search time 2255 Seconds

(without alignments)  
4524.681 Million cell updates/sec

Title: US-09-820-339A-1

Perfect score: 630

Sequence: 1 tcggaacatgagaccgtct.....acttcgtcatgcagcgcgtc 630

Scoring table: IDENTITY\_NUC

Gapop 10.0 , Gapext 1.0

Searched: 16154066 seqs, 8097743376 residues

Total number of hits satisfying chosen parameters: 32308132

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database :

EST:\*

1: em\_estba:\*

2: em\_esthum:\*

3: em\_estin:\*

4: em\_estmu:\*

5: em\_estov:\*

6: em\_estpl:\*

7: em\_estro:\*

8: em\_htc:\*

9: gb\_est1:\*

10: gb\_est2:\*

11: gb\_htc:\*

12: gb\_est3:\*

13: gb\_est4:\*

14: gb\_est5:\*

15: em\_estfun:\*

16: em\_estom:\*

17: gb\_gss:\*

18: em\_gss\_hum:\*

19: em\_gss\_inv:\*

20: em\_gss\_pln:\*

21: em\_gss\_vrt:\*

22: em\_gss\_fun:\*

23: em\_gss\_mam:\*

24: em\_gss\_mus:\*

25: em\_gss\_other:\*

26: em\_gss\_pro:\*

27: em\_gss\_rod:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Match	Length	DB	ID	Description
1	617.4	98.0	864	9	AU120692	AU120692 AU120692
2	548.2	87.0	837	13	BI114221	BI114221 602862588
3	519.6	82.5	713	12	BF309251	BF309251 601890196
4	505.2	80.2	806	12	BF305214	BF305214 601892667
5	499.6	79.3	660	12	BF307986	BF307986 601894231
6	463.4	73.6	651	10	BB613689	BB613689 BB613689

7	448.6	71.2	566	9	AA596914	AA596914 vo21f03.r
8	439.8	69.8	946	9	AA755688	AA755688 vu12f02.r
9	418.2	66.4	554	10	BE664308	BE664308 148713 MA
10	393.2	62.4	497	9	AA636794	AA636794 vr16g12.r
11	383.8	60.9	479	9	AA636687	AA636687 vr15f05.r
12	345.4	55.0	853	14	BQ735223	BQ735223 AGENCOURT
13	345.8	54.9	713	13	BQ64207	BQ64207 BQ64207
14	345.8	54.9	862	14	BQ733592	BQ733592 AGENCOURT
15	343.2	54.5	494	9	AA688563	AA688563 vu17b11.r
16	325.2	51.6	495	9	AA692456	AA692456 vt21e02.r
17	324.4	51.5	632	13	BQ35634	BQ35634 RJ035634
18	318.6	50.6	651	14	BQ523257	BQ523257 NISC_n121
19	314.6	49.9	606	13	BQ031137	BQ031137 BQ031137
20	313.4	49.7	682	12	BG018521	BG018521 daa46h12.
21	312.6	49.6	615	13	BQ332622	BQ332622 BQ332622
22	311.4	49.4	397	9	AA596126	AA596126 vol17e09.r
23	296.8	47.1	650	14	BQ520897	BQ520897 NISC_n107
24	276.8	43.9	542	13	BQ40974	BQ40974 BQ40974
25	266	42.2	531	13	BQ065441	BQ065441 BQ065441
26	266	42.2	642	13	BQ062932	BQ062932 BQ062932
27	261.6	41.5	953	12	BG828551	BG828551 602752696
28	249	39.5	608	14	BM729043	BM729043 UI-E-E01-
29	241.2	38.3	667	13	BQ706932	BQ706932 BQ706932
30	238.8	37.9	610	13	BQ751194	BQ751194 BQ751194
31	233.2	37.0	460	13	BQ041265	BQ041265 BQ041265
32	223	35.4	693	13	BQ068841	BQ068841 BQ068841
33	213.6	33.9	358	9	AA673472	AA673472 vn46h11.r
34	210.2	33.4	563	13	BI195946	BI195946 602756234
35	207.2	32.9	355	12	BE899992	BE899992 149491 MA
36	201.4	32.0	758	14	BQ442306	BQ442306 UI-N-EXO-
37	199.2	31.6	882	13	BI195149	BI195149 602944157
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39	195.4	31.0	537	10	AW787186	AW787186 120930 MA
40	191.2	30.3	694	13	BI194994	BI194994 602944249
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42	186.2	29.6	669	10	BQ653265	BQ653265 BQ653265
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45	184	29.2	660	10	BB665088	BB665088 BB665088

ALIGNMENTS

RESULT 1  
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LOCUS AU120692 HEMBB1 Homo sapiens cDNA clone HEMBB1001217 5', mRNA  
DEFINITION AU120692 864 bp mRNA linear EST 01-AUG-2002  
ACCESSION AU120692  
VERSION AU120692.1 GI:10935927  
KEYWORDS EST.  
SOURCE human.  
ORGANISM Homo sapiens

REFERENCE 1 (bases 1 to 864)  
AUTHORS Ota, T., Nishikawa, T., Suzuki, Y., Ishii, S., Saito, K., Kawai, Y., Yamamoto, J., Wakamatsu, A., Nakamura, Y., Nagai, T., Sugano, S. and Isogai, T.  
HRI human cDNA project  
Unpublished (2000)  
Contact: Takao Isogai  
Genomics Laboratory  
Helix Research Institute  
1532-3 Yana, Kisarazu, Chiba 292-0812, Japan  
Tel: 81-438-52-3975  
Fax: 81-438-52-3986  
Email: genomics@hri.co.jp

TITLE HRI human cDNA project  
JOURNAL Unpublished (2000)  
COMMENT Contact: Takao Isogai  
Genomics Laboratory  
Helix Research Institute  
1532-3 Yana, Kisarazu, Chiba 292-0812, Japan  
Tel: 81-438-52-3975  
Fax: 81-438-52-3986  
Email: genomics@hri.co.jp

Research Institute; cDNA library construction: Department of Virology, Institute of Medical Science, University of Tokyo, and Helix Research Institute.

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FEATURES
source
Location/Qualifiers
1. .864
/organism="Homo sapiens"
/db_xref="taxon:9606"
/clone="HEMBB1001217"
/clone_lib="HEMBB1"
/tissue_type="whole embryo, mainly body"
/dev_stage="embryo, 10 weeks"
/note="Vector: pME18SFL3"
BASE COUNT      200 a  249 c  214 g  198 t      3 others
ORIGIN
Query Match      98.0%; Score 617.4; DB 9; Length 864;
Best Local Similarity 99.7%; Pred. No. 5e-158;
Matches 629; Conservative 0; Mismatches 1; Indels 1; Gaps 1;
QY 1 TCCGAACATGAGACCCGCTCTGGTGGCAAGCTATTTAAAGACTACAGCAGCGTGGTGGG 60
Db 81 TCCGAACATGAGACCCGCTCTGGTGGCAAGCTATTTAAAGACTACAGCAGCGTGGTGGG 140
61 CCAGTGGAGAACACCCGCCAGGTCGTGGAGGTCAACCGTGGGCTGCGAGTATACAGCTC 120
141 CCAGTGGAGAACACCCGCCAGGTCGTGGAGGTCAACCGTGGGCTGCGAGTATACAGCTC 200
121 ATCAATGTGATGAAGTAATAGATCGTGACACCAACATGTGGTCTGAAACAGCAATGG 180
201 ATCAATGTGATGAAGTAATAGATCGTGACACCAACATGTGGTCTGAAACAGCAATGG 260
181 GTGATTACAACTTAAATGGAATCCAGATGACTATGGCGGTGTG-AAAAAATTCACAT 239
261 GTGATTACAACTTAAATGGAATCCAGATGACTATGGCGGTGTGAAAAAATTCACAT 320
240 TCCTTCAAGAAAGATCTGGCGCCAGACCTTGTCTCTATTAACGATGACGATGGTCACTT 299
321 TCCTTCAAGAAAGATCTGGCGCCAGACCTTGTCTCTATTAACGATGACGATGGTCACTT 380
300 TGCTATTGTCAAGTTCACCAAGTCTCTGCGAGTACATCGGCACATCAGTGGACACC 359
381 TGCTATTGTCAAGTTCACCAAGTCTCTGCGAGTACATCGGCACATCAGTGGACACC 440
360 TCCAGCATCTTTAAAGCTACTGTGAGATCATCGTCACCCACTTTCCTTTCATGAACA 419
441 TCCAGCATCTTTAAAGCTACTGTGAGATCATCGTCACCCACTTTCCTTTCATGAACA 500
420 GAAGTGCAGCATGAAGTGGGACCTGGAGCTACGACGGCTCTGTGTCGTCGCCATCAACCC 479
501 GAAGTGCAGCATGAAGTGGGACCTGGAGCTACGACGGCTCTGTGTCGTCGCCATCAACCC 560
480 GGAAGCGACACCCAGCATCGTACGATCATGGAGAGCGGGAGTGGTGTATCAAGGA 539
561 GGAAGCGACACCCAGCATCGTACGATCATGGAGAGCGGGAGTGGTGTATCAAGGA 620
540 GTCCCGGGCTGGAAGCAGCTCCGTCGACCTATTCCTGTCGCCCGACACCCCTACCTGGA 599
621 GTCCCGGGCTGGAAGCAGCTCCGTCGACCTATTCCTGTCGCCCGACACCCCTACCTGGA 680
QY 600 CATCACTTACCACTTCGTCATGAGCGGCTTG 630
Db 681 CATCACTTACCACTTCGTCATGAGCGGCTTG 711

RESULT 2
Bill14221
LOCUS      602862588F1 NIH_MGC_17 Homo sapiens cDNA clone IMAGE:5021829 5',
DEFINITION mRNA sequence.
ACCESSION Bill14221
VERSION    Bill14221.1 GI:14565122
KEYWORDS   EST.
SOURCE     human.
ORGANISM   Homo sapiens
            Eukaryota; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

```

```

REFERENCE
1 (bases 1 to 837)
NIH-MGC http://mgc.nci.nih.gov/.
AUTHORS   National Institutes of Health, Mammalian Gene Collection (MGC)
TITLE     Unpublished (1999)
JOURNAL   COMMENT
Contact: Robert Strausberg, Ph.D.
Email: cgabbs-r@mail.nih.gov
Tissue Procurement: ARCC
CDNA Library Preparation: Ling Hong/Rubin Laboratory
CDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL)
DNA Sequencing by: Incyte Genomics, Inc.
Clone distribution: MGC clone distribution information can be
found through the I.M.A.G.E. Consortium/LLNL at:
http://image.llnl.gov
Plate: LLCM1840 row: p column: 22
High quality sequence stop: 696.

FEATURES
Location/Qualifiers
1. .837
/organism="Homo sapiens"
/db_xref="taxon:9606"
/clone="IMAGE:5021829"
/clone_lib="NIH_MGC_17"
/tissue_type="rhabdomyosarcoma"
/lab_host="DH10B (phage-resistant)"
/note="Organ: muscle; Vector: pOTB7; Site:1: EcoRI;
Site:2: XhoI; CDNA made by oligo-dT priming.
Directionally cloned into EcoRI/XhoI sites using the
following 5' adaptor: GCCACGAG(G). Size-selected >500bp
for average insert size 1.8kb. Library constructed by
Ling Hong in the laboratory of Gerald M. Rubin (University
of California, Berkeley) using ZAP-CDNA synthesis kit
(Stratagene) and Superscript II RT (Life Technologies)."
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BASE COUNT      204 a  232 c  213 g  188 t
ORIGIN
Query Match      87.0%; Score 548.2; DB 13; Length 837;
Best Local Similarity 94.9%; Pred. No. 4.4e-139;
Matches 599; Conservative 0; Mismatches 29; Indels 4; Gaps 3;
QY 1 TCCGAACATGAGACCCGCTCTGGTGGCAAGCTATTTAAAGACTACAGCAGCGTGGTGGG 60
Db 121 TCCGAACATGAGACCCGCTCTGGTGGCAAGCTATTTAAAGACTACAGCAGCGTGGTGGG 180
61 CCAGTGGAGAACACCCGCCAGGTCGTGGAGGTCAACCGTGGGCTGCGAGTATACAGCTC 120
181 CCAGTGGAGAACACCCGCCAGGTCGTGGAGGTCAACCGTGGGCTGCGAGTATACAGCTC 240
121 ATCAATGTGATGAAGTAATAGATCGTGACACCAACATGTGGTCTGAAACAGCAATGG 180
241 ATCAATGTGATGAAGTAATAGATCGTGACACCAACATGTGGTCTGAAACAGCAATGG 300
181 GTGGATTACAACTTAAATGGAATCCAGATGACTATGGCGGTGTGAAAAAATTCACATT 240
301 GTGGATTACAACTTAAATGGAATCCAGATGACTATGGCGGTGTGAAAAAATTCACATT 360
241 CCTTCAGAAAGATCTGGCGCCAGACCTTGTCTCTATTAACGATGAGATGGTGAATTT 300
361 CCTTCAGAAAGATCTGGCGCCAGACCTTGTCTCTATTAACGATGAGATGGTGAATTT 420
301 GCTATTGTCAAGTTCACCAAGTGTCTCTGAGTACACTGCCACATCAGCTGGACACCT 360
421 GCTATTGTCAAGTTCACCAAGTGTCTCTGAGTACACTGCCACATCAGCTGGACACCT 480
361 CCAGCCATCTTTAAAGCTACTGTGAGATCATCGTCACCCACTTTCCTTTTGAAGAACAG 420
481 CCAGCCATCTTTAAAGCTACTGTGAGATCATCGTCACCCACTTTCCTTTTGAAGAACAG 540
421 AACTGCAGCATGAAGTGGGACCTTGGACCTTGTCTGTCTGTCTGTCTGTCTGTCTGTCTGT 480
541 AACTGCAGCATGAAGTGGGACCTTGGACCTTGTCTGTCTGTCTGTCTGTCTGTCTGTCTGT 600
481 GAAAGCGACACCCAGCATCGTACGATCATGGAGAGCGGGAGTGGTGTATCAAGGA 540
601 GAAAGCGACACCCAGCATCGTACGATCATGGAGAGCGGGAGTGGTGTATCAAGGA 658

```









Tel: 314 286 1800  
Fax: 314 286 1810

Email: mouseest@watson.wustl.edu  
This clone is available royalty-free through LLNL; contact the  
IMAGE Consortium (info@image.llnl.gov) for further information.

Seq primer: -28ml3 rev2 ET from Amersham  
High quality sequence stop: 485.

## FEATURES

## source

1. .566  
/organism="Mus musculus"  
/strain="C3H"  
/db\_xref="taxon:10090"  
/clone\_lib="Barstead mouse myotubes MPLRB5"  
/cell\_line="C2C12"  
/lab\_host="DH10B"

/note="Vector: pT7T3D-Pac (Pharmacia) with a modified  
polylinker; Site\_1: EcoRI; Site\_2: NotI; 1st strand cDNA  
was primed with a Not I - oligo(dT) primer [5'  
TGTTACGAATCTGAAGTGGAGCGCGCCCTTTTTTTTTTTTTTTTTT  
3']; double-stranded cDNA was ligated to Eco RI adaptors  
[AATTCGGATCCTTG], digested with Not I and cloned into the  
Not I and Eco RI sites of the modified pT7T3 vector.  
Library constructed by Bob Barstead. The C2C12 cell line  
(available from ATCC, catalog # CRL-1772) differentiates  
rapidly, forming contractile myotubes and producing  
characteristic muscle proteins."

BASE COUNT 155 a 140 c 149 g 122 t

## ORIGIN

Query Match 71.2%; Score 448.6; DB 9; Length 566;  
Best Local Similarity 89.2%; Pred. No. 6.5e-112;  
Matches 495; Conservative 0; Mismatches 59; Indels 1; Gaps 1;

QY 1 TCGAACATGAGACCCGCTCG-TGGCAAAAGCTATTAAAGACTACAGAGCTGGTGGC 59  
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Db 8 TCGAACATGAGACCGCTCGTGTGGCAAAAGCTTTTGAAGACTACAGAGCTAGTCCG 67  
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QY 60 GCCAGTGGAAAGACCCGCGAGGCTGGAGAGTCCAGCTGGCTGATACAGCT 119  
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Db 68 GCCAGTGGAGACCCGCTGAGATGTACAGTCAGCTGGCTGATACAGCT 127  
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QY 120 CATCAATGTGGATGAAGTAATCAGATCGTGACAAACAATGTGGTCTGAAACAGCAATG 179  
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Db 128 TATCAATGTGGATGAAGTAATCAGATGTGACAAACAATGTAGCTGTAACAGCAATG 187  
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QY 180 GGTGGATTACAACTAAATGGATCCAGATGACTATGGCGGTGTGNAAAAATTCACAT 239  
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188 GGTGGATTACAACTGAAATGGAAATCCAGATGACTATGGAGAGTGAATAAAATTCACAT 247  
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Db 428 GAATTCAGCATGAAGTGGGACCTGGACCTATGAGCGGCTGTGCTGGCCATTAACCC 487  
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QY 480 GGAAGCGCACCGACCTGAGCAACTTCATGGAGAGCGGGAGTGGGTGATCAAGGA 539  
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QY 540 GTCCCGGGGTGGNA 554  
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Db 548 AGCTCGGGGTGGAA 562

## RESULT 8

AA755688

## LOCUS

## DEFINITION

AA755688 946 bp mRNA linear EST 21-JAN-1998  
vul2f02.r1 Barstead mouse myotubes MPLRB5 Mus musculus cDNA clone  
IMAGE:1180443 5' similar to gb:Y00762 ACETYLCHOLINE RECEPTOR  
PROTEIN, ALPHA CHAIN PRECURSOR (HUMAN); gb:X03986 Mouse mRNA for  
muscle nicotinic acetylcholine receptor (MOUSE); mRNA sequence.

## ACCESSION

AA755688

## VERSION

AA755688.1

## KEYWORDS

EST.

## SOURCE

house mouse.

## ORGANISM

Mus musculus

## REFERENCE

1 (bases 1 to 946)

## AUTHORS

Marra,M., Hillier,L., Allen,M., Bowles,M., Dietrich,N., Dubuque,T.,  
Geisel,S., Kucaba,T., Lacy,M., Le,M., Martin,J., Morris,M.,  
Schellenberg,K., Steptoe,M., Tan,F., Underwood,K., Moore,B.,  
Theising,B., Wylie,T., Lennan,G., Soares,B., Wilson,R. and  
Waterston,R.

## TITLE

The WashU-HMI Mouse EST Project

## JOURNAL

Unpublished (1996)

## COMMENT

Contact: Marra M/Mouse EST Project  
WashU-HMI Mouse EST Project  
Washington University School of Medicine  
4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108  
Tel: 314 286 1800  
Fax: 314 286 1810  
Email: mouseest@watson.wustl.edu  
This clone is available royalty-free through LLNL; contact the  
IMAGE Consortium (info@image.llnl.gov) for further information.  
MGI:638291

## Seq primer:

-28ml3 rev2 ET from Amersham

## High quality sequence stop:

508.

## FEATURES

## source

1. .946

## Location/Qualifiers

/organism="Mus musculus"  
/strain="C3H"  
/db\_xref="taxon:10090"  
/clone\_lib="Barstead mouse myotubes MPLRB5"  
/cell\_line="C2C12"  
/lab\_host="DH10B"

## note="Vector: pT7T3D-Pac (Pharmacia) with a modified

polylinker; Site\_1: EcoRI; Site\_2: NotI; 1st strand cDNA  
was primed with a Not I - oligo(dT) primer [5'  
TGTTACGAATCTGAAGTGGAGCGCGCCCTTTTTTTTTTTTTTTTTT  
3']; double-stranded cDNA was ligated to Eco RI adaptors  
[AATTCGGATCCTTG], digested with Not I and cloned into the  
Not I and Eco RI sites of the modified pT7T3 vector.  
Library constructed by Bob Barstead. The C2C12 cell line  
(available from ATCC, catalog # CRL-1772) differentiates  
rapidly, forming contractile myotubes and producing  
characteristic muscle proteins."

## BASE COUNT

231 a 248 c 242 g 224 t

## ORIGIN

Query Match 69.8%; Score 439.8; DB 9; Length 946;  
Best Local Similarity 85.4%; Pred. No. 2.2e-109;  
Matches 537; Conservative 0; Mismatches 87; Indels 5; Gaps 4;

## QY

1 TCGAACATGAGACCCGCTCT-GTGGCAAAAGCTATTAAAGACTACAGAGCTGGTGGC 59  
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## Db

69 TCGAACATGAGACCGCTCTNGGTGGCAAAAGCTTTTGAAGACTACAGAGCTAGTCCG 128  
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## QY

60 GCCAGTGGAAAGACCCGCGAGGCTGGAGAGTCCAGCTGGCTGATACAGCT 119  
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## Db

129 GCCAGTGGAGACCCGCTGAGATGTACAAAGTCACCGTGGTCTACAGCTGATCCAGCT 188  
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## QY

120 CATCAATGTGGATGAAGTAATCAGATCGTGACAAACAATGTGGTCTGAAACAGCAATG 179  
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Db 181 AACACGACGACGCGACTTTGGCCATTGTCAAATTCACCAAGGTGCTCCTGGACTACACC 240
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Db 241 GGCACATCAGTGGACACCTCCAGCCATCTTTAAAGCTACTGTGAGATCATCTGCACT 300
Qy 400 CACTTCCCTTTGATGACAGCACTGACGATGAGCTGGCGGCTGGACCTGACCTACGACGC 459
Db 301 CACTTCCCTTTGATGACAGCACTGACGATGAGCTGGCGGCTGGACCTGACCTATGACGC 360
Qy 460 TCTGTCGTCGATCAACCCGGAAGCCAGCCAGCAGCTGAGCACTTCATGGAGAGC 519
Db 361 TCTGTCGTCGATCAACCCGGAAGCTGACGAGCCAGCTGAGTAACTTCATGGAGAGC 420
Qy 520 GGGGAGTGGGTGATCAAGAGTCCCGGGCTGGAGCACTCCGTCGACCTATTCCTGTCGC 579
Db 421 GGGGAGTGGGTGATCAAGAGTCCCGGGCTGG-ATCACTGGGTGTTCTACTCCTGCTGC 479

JULY 12
BO735223
LOCUS
DEFINITION AGENCOURT_8097435 NICH D XGC Emb4 Xenopus laevis cDNA clone EST 16-JUL-2002
IMAGE:5542583 5', mRNA sequence.
BO735223
VERSION
KEYWORDS
SOURCE EST.
ORGANISM
Xenopus laevis
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Amphibia; Batrachia; Anura; Mesobatrachia; Pipoidae; Pipidae;
Xenopodinae; Xenopus.
1 (bases 1 to 853)
NCI-CCGAP http://www.ncbi.nlm.nih.gov/ncicgap.
National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
Tumor Gene Index
Unpublished (1997)
Contact: Robert Strausberg, Ph.D.
Email: cgapsb@mail.nih.gov
Tissue Procurement: Dr. Igor Dawid
cDNA Library Preparation: Life Technologies, Inc.
cDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL)
DNA Sequencing by: Agencourt Bioscience Corporation
Clone distribution: NCI-CCGAP clone distribution information can be
found through the I.M.A.G.E. Consortium/LLNL at:
www-bio.llnl.gov/bbrp/image/image.html
Plate: LLAM12242 row: b column: 24
High quality sequence stop: 647.
Location/Qualifiers
1..853
/organism="Xenopus laevis"
/db_xref="taxon:8355"
/clone="IMAGE:5542583"
/clone.lib="NICH D XGC Emb4"
/dev_stage="embryo, stage 31-32"
/lab_host="DH10B (phage-resistant)"
Note="Organ: whole embryo; Vector: pCMV-SPORT6; Site:1:
Noti; Site:2: SalI; Cloned unidirectionally. Primer: Oligo
dT. Average insert size 2.1 kb. Constructed by Life
Technologies. Note: This is a Xenopus Gene Collection (XGC
) library."
BASE COUNT 229 a 169 c 188 g 266 t 1 others
ORIGIN

Query Match 55.0%; Score 346.4; DB 14; Length 853;
Best Local Similarity 71.9%; Pred. No. 7.9e-84;
Matches 452; Conservative 0; Mismatches 177; Indels 0; Gaps 0;

Qy 1 TCCGAACATGAGACCCGCTGCTGGTGCACAGCTATTAAAGACTACAGCGGTGGTCGCG 60
Db 80 TCTGAGGATGAATCCCGCTTATTAATGACTATTCAAGAGCTACACAAAGTGGTCTGT 139
Qy 61 CCATGGAGACCCCGCCAGGTCTGGAGGTCACCGTGGGCTGCAGCTGATACAGTCT 120
```

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Db 140 CCAGTCAAGGCTTTTAAAGACAAAGTTGTGGTGACGGTGGGACTCCAGCTTTATACAGCTT 199
Qy 121 ATCAATGTGGATGAAGTAAATCAGATCGTGACAAACAATGTGCTGTGAACAGCAATGG 180
Db 200 ATTAAATGTAATGAAGTCAATCAATTTGTAACAACAATGTCCGTCTGAAACAGCAATGG 259
Qy 181 GTGGATTAACAACCTAAATGGAAATCCAGATGACTATGCGGGTGTGAAAAAAATTCACATT 240
Db 260 GAGGATGTTCACCTAAAGTGGGATCCAGAAGATTATGGAGGCATAAAGAAAGTTGGAATC 319
Qy 241 CTTTCAGAAAAGATGTGGGGCCAGACCTTTCTCTATAACGATGCAGATGGTACTTTT 300
Db 320 CTTTCTAGTGATATTTGGGCGCTGATATGTGCTGACCAACAATGCAGATGGAGACTTT 379
Qy 301 GCTATTGTCAAGTTTCAACCAAAAGTCTCTGACAGTACACTGGCCACATCAGTGGACACCT 360
Db 380 GCTATTGTCCAGAAACAAGGTCCTTCUGGATTACACTGGGGAATAATATGTTGGTCCC 439
Qy 361 CCAGCCATCTTTAAAGTACTGTGAGATCATCGTCACCCACTTTCCCTTTGATGAACAG 420
Db 440 CTTGCCATTTTAAAGTACTGTGAAATGATGTACATACTTTCCATTTGACCTACAG 499
Qy 421 RACTGCACATCAAGCTGGGACCTGGACCTAGCAGGCTCTGTGCTGGCCATCAACCG 480
Db 500 AACTGCAGCATGAAGCTTGGTACTTGGACTTACGATGGCAGCATTAGTTGTTATAATCCA 559
Qy 481 GAAAGCGACGACCTGAGCAACTTCATGGAGCGGGAGTGGGTGATCAAGGAG 540
Db 560 GAAATGATCGTCCAGATCTGAGTAACTTATGGAAGTGGAGAAATGGTACATGAAGAT 619
Qy 541 TCCCGGGGTGGAAGACATCCGTGACCTATTCCTGTCGCCCGACACCCCTACCTGGAC 600
Db 620 TATCGCTGCTGGAAGCACTGNGTTTATTATGACTGTGCTGCCAGAACACCATCTTGGAT 679
Qy 601 ATCACCATTACCCTTCGTATGTCAGCGCCT 629
Db 680 ATCACAATACCAATTTCTCTCGCAGAGGCT 708

RESULT 13
BO735223
LOCUS
DEFINITION BO735223 NIBB Mochii clone XL078109 5', mRNA sequence.
ACCESSION BO735223
VERSION
KEYWORDS
SOURCE EST.
ORGANISM
Xenopus laevis
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Amphibia; Batrachia; Anura; Mesobatrachia; Pipoidae; Pipidae;
Xenopodinae; Xenopus.
1 (bases 1 to 713)
Kitayama,A., Terasaka,C., Mochii,M., Ueno,N., Shin-i,T. and Kohara
,Y.
Expressed genes in X. laevis embryo
Unpublished (2001)
Contact: Tadasu Shin-i
Center For Genetic Resource Information
National Institute of Genetics
1111 Yata, Mishima, Shizuoka 411-8540, Japan
Tel: 81-559-81-6856
Fax: 81-559-81-6855
Email: tshini@genes.nig.ac.jp.
Location/Qualifiers
1..713
/organism="Xenopus laevis"
/db_xref="taxon:8355"
/clone="XL078109"
/clone.lib="NIBB Mochii normalized Xenopus tailbud
library"
/tissue_type="whole embryo"

FEATURES
source
```









GenCore version 5.1.3  
Copyright (c) 1993 - 2003 Compugen Ltd.

OM protein - protein search, using sw model

Run on: January 14, 2003, 16:10:42 ; Search time 140 Seconds  
(without alignments)  
199.876 Million cell updates/sec

Title: US-09-820-339A-2

Perfect score: 1143

Sequence: 1 SEHETRLVAKLFKDYSSVVR.....SCPDTPYLDITYHFMQRL 210

Scoring table: BIOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 908470 seqs, 133250620 residues

Total number of hits satisfying chosen parameters: 908470

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : A\_Geneseq\_101002.\*  
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2: /SID22/gcgdata/geneseq/geneseq-emb1/AA1981.DAT.\*  
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11: /SID22/gcgdata/geneseq/geneseq-emb1/AA1990.DAT.\*  
12: /SID22/gcgdata/geneseq/geneseq-emb1/AA1991.DAT.\*  
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	1139	99.7	457	6 AAP50361	Human acetyl choli
2	1139	99.7	457	21 AAY56386	Human acetylcholin
3	1133	99.1	437	22 AAU69151	Human Acetylcholin
4	1111.5	97.2	235	11 AAW33381	Human acetylcholin
5	1100.5	96.3	456	11 AAR06254	Human acetylcholin
6	1088.5	95.2	230	19 AAW33382	Human acetylcholin
7	1086.5	95.1	456	11 AAR06256	Calf acetylcholine
8	1074.5	94.0	456	11 AAR06255	Mouse acetylcholin
9	969.5	84.8	455	11 AAR06257	Chicken acetylchol
10	910	79.6	449	14 AAR36984	Acetylcholine rece

11	910	79.6	449	17	AAR86421	Acetylcholine rece
12	910	79.6	461	5	AAP40417	Acetyl choline acc
13	903	79.0	449	14	AAR35057	Alpha subunit of T
14	885	77.4	449	15	AAR45946	Acetylcholine rece
15	845	73.9	460	11	AAR06259	Fish acetylcholine
16	635	55.6	121	19	AAW83383	Human acetylcholin
17	612.5	53.6	146	19	AAW83384	Human acetylcholin
18	597.5	52.3	504	15	AAW44156	Human neuronal nic
19	594.5	52.0	504	18	AAW09022	Human neuronal nic
20	578.5	50.6	622	23	AAO17245	Modified acetylcho
21	578.5	50.6	622	23	ABB08885	Modified acetylcho
22	577.5	50.5	538	22	ABG27365	Novel human diagno
23	577.5	50.5	627	18	AAW11824	Alpha4 subunit of
24	577.5	50.5	627	18	AAW11825	Alpha4 subunit of
25	577.5	50.5	627	18	AAW09023	Neuronal nicotinic
26	576	50.4	468	18	AAW09024	Neuronal nicotinic
27	575.5	50.3	529	15	AAW44155	Human neuronal nic
28	575.5	50.3	529	16	AAW73966	Alpha 2 subunit of
29	575.5	50.3	529	18	AAW09021	Neuronal nicotinic
30	575.5	50.3	529	23	ABG61850	Prostate cancer-as
31	569.5	49.8	494	18	AAW09018	Neuronal nicotinic
32	562.5	49.2	622	23	AAO17242	Modified acetylcho
33	562.5	49.2	622	23	ABB08883	Insect nicotinic A
34	559	48.9	631	23	AAO17244	Modified acetylcho
35	559	48.9	631	23	ABB08884	Modified hen ACR s
36	549	48.0	631	23	AAO17243	Modified acetylcho
37	547.5	47.9	627	15	AAW44152	Human neuronal nic
38	543	47.5	772	22	ABB59012	Drosophila melanog
39	536.5	46.9	458	18	AAW09020	Neuronal nicotinic
40	536.5	46.9	458	22	AAE12775	Human cholinergic
41	522.5	45.7	576	22	ABB61954	Drosophila melanog
42	520.5	45.5	580	22	ABB62727	Drosophila melanog
43	516.5	45.2	502	22	RAW51021	JTF-38 nAChR alpha
44	507	44.4	479	18	AAW09019	Nicotinic acetylch
45	503	44.0	519	22	ABB62694	Drosophila melanog

#### ALIGNMENTS

RESULT 1  
AAP50361  
ID AAP50361 standard; Protein; 457 AA.  
XX  
AC AAP50361;  
XX  
DT 08-JAN-1992 (first entry)  
XX  
DE Human acetyl choline receptor alpha.  
XX  
KW hACR-alpha; myasthenia gravis; MG; neuromyopathy.  
XX  
OS Homo sapiens.  
XX  
FH Key Location/Qualifiers  
FT Active-site 42..47  
FT /label= Epitope  
FT /note= "Claim 1 (I)"  
FT Active-site 86..91  
FT /label= Epitope  
FT /note= "Claim 1 (II)"  
FT Active-site 158..163  
FT /label= Epitope  
FT /note= "Claim 1 (III)"  
FT Active-site 181..186  
FT /label= Epitope  
FT /note= "Claim 1 (IV)"  
FT Active-site 198..203  
FT /label= Epitope  
FT /note= "Claim 1 (V)"  
FT Active-site 354..359  
FT /label= Epitope  
FT /note= "Claim 1 (VI)"



XX Human; epitope; autoimmune disease; myasthenia gravis;  
KW Human leukocyte antigen; acetylcholine receptor; HLA DR3; HLA DR2; AChR;  
KW antigen; immunosuppressive; major histocompatibility complex; MHC.  
XX Homo sapiens.  
XX WO200174848-A2.  
XX 11-OCT-2001.  
XX 30-MAR-2001; 2001WO-US10450.  
XX 31-MAR-2000; 2000US-193745P.  
XX (CORI-) CORIXA CORP.  
XX Deshpande S, Spack E, Wehner N, Arimilli S;  
XX WPI; 2001-648547/74.  
XX Peptide epitopes of the acetylcholine receptor target helper T cells  
PT recognize an antigen in association with an MHC component and are  
PT useful to treat autoimmune disease particularly myasthenia gravis  
XX Example 1; Fig 1; 46pp; English.  
XX The invention relates to a composition comprising an isolated  
CC acetylcholine receptor (AChR) oligopeptide of about 12 to 20 amino  
CC acids. The peptides form a set of 69 overlapping antigenic peptide  
CC epitopes which show various affinities for human leukocyte antigens  
CC (HLA) HLA-DR2 and DR3. Also included is a composition comprising an  
CC antigenic peptide and a Major histocompatibility complex (MHC) component  
CC having an antigenic binding site, where binding of the peptide to  
CC the binding site induces non-responsiveness in a target T cell in a  
CC mammal, where the MHC component is an MHC class II component. Peptides  
CC with affinity for HLA-DR2 and DR-3 from proteins other than AChR are also  
CC included. The composition is used to treat myasthenia gravis and other  
CC autoimmune diseases. The present sequence is the human acetylcholine  
CC receptor from which the 69 antigenic peptide epitopes are derived.  
XX  
SQ Sequence 437 AA;  
Query Match 99.1%; Score 1133; DB 22; Length 437;  
Best Local Similarity 99.0%; Pred. No. 9.1e-110;  
Matches 208; Conservative 0; Mismatches 2; Indels 0; Gaps 0;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQLIQLINVDENVQIVTNNRLKQOW 60  
DB 1 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQLIQLINVDENVQIVTNNRLKQOW 60  
QY 61 VDYNLKNPDDYGGVKKIHIPSEKIRPDLVLYNNADGDFAIKFTKVLQYTGHTITWP 120  
DB 61 VDYNLKNPDDYGGVKKIHIPSEKIRPDLVLYNNADGDFAIKFTKVLQYTGHTITWP 120  
QY 121 PAIFKSCYEIIVHFPFDEQNCMKLTWTYDGSVAINPESQDPLSNFMESEGEWIK 180  
DB 121 PAIFKSCYEIIVHFPFDEQNCMKLTWTYDGSVAINPESQDPLSNFMESEGEWIK 180  
QY 181 SRGKHSVTYSCCPDTPYLDITVHFVQRL 210  
DB 181 SRGKHSVTYSCCPDTPYLDITVHFVQRL 210  
RESULT 4  
AAW83381  
ID AAW83381 standard; Protein; 235 AA.  
XX AAW83381;  
XX  
XX 19-FEB-1999 (first entry)  
XX Human acetylcholine receptor alpha-subunit variant 1.

XX Human; acetylcholine receptor alpha-subunit; hAChR; variant;  
KW myasthenia gravis; autoimmune response; neuromuscular disorder;  
KW diagnosis.  
XX Homo sapiens.  
XX Synthetic.  
XX WO9850544-A1.  
XX 12-NOV-1998.  
XX 06-MAY-1998; 98WO-IL00211.  
XX 07-MAY-1997; 97IL-0120792.  
XX (YEDA ) YEDA RES & DEV CO LTD.  
XX Barchan D, Fuchs S, Souroujon MC;  
XX WPI; 1998-610383/51.  
XX N-PSDB; AAV72829.  
XX Poly peptide(s) modulating auto:immune response to acetyl:choline  
PT receptor - comprise all or part of extracellular domain of human  
PT acetyl:choline receptor alpha-sub:unit, useful in treatment and  
PT diagnosis of myasthenia gravis  
XX Claim 11; Fig -; 59pp; English.  
XX The present sequence represents a human acetylcholine receptor (hAChR)  
CC alpha-subunit variant which is used as all or part of a protein for  
CC modulating the autoimmune response of an individual to hAChR. The  
CC protein can be administered to alleviate and/or treat myasthenia gravis  
CC (MG), and is useful for diagnosing the condition. It can be combined  
CC with a suitable carrier in pharmaceutical compositions, and is useful  
CC for such therapeutic (especially nasal or oral) administration and  
CC diagnosis. MG is a human neuromuscular disorder, in which autoantibodies  
CC against AChR bind to the receptor and interfere with signal transmission  
CC from nerve to muscle at the neuromuscular junction. The extracellular  
CC domain of the AChR alpha-subunit appears to be the prime target for  
CC these autoantibodies, particularly the main immunogenic region (MIR).  
CC The protein enables antigen-specific immunotherapy which suppresses only  
CC adverse autoimmune responses whilst leaving overall immune system  
CC intact, unlike current methods of treating MG using immunosuppressive  
CC drugs e.g. steroids.  
CC N.B. The present sequence is not given in the specification but has been  
CC created by the indexer as specified in the claim using the sequences  
CC given in the figures.  
XX  
SQ Sequence 235 AA;  
Query Match 97.2%; Score 1111.5; DB 19; Length 235;  
Best Local Similarity 88.5%; Pred. No. 6.7e-108;  
Matches 208; Conservative 1; Mismatches 1; Indels 25; Gaps 1;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQLIQLINVDENVQIVTNNRLKQ-- 58  
DB 1 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQLIQLINVDENVQIVTNNRLKQGD 60  
QY 59 -----QWVDYNLKNPDDYGGVKKIHIPSEKIRPDLVLYNN 95  
DB 61 MVDLPRPSCVTLGVPLFSLHQDEQWVDYNLKNPDDYGGVKKIHIPSEKIRPDLVLYND 120  
QY 96 AGDGFALVKTFTKVLQYTGHTITWTPPAIFKSCYEIIVHFPFDEQNCMKLTWTYDGSV 155  
DB 121 AGDGFALVKTFTKVLQYTGHTITWTPPAIFKSCYEIIVHFPFDEQNCMKLTWTYDGSV 180  
QY 156 VAINPESDQDPLSNFMESEGEWIKESRGWKHSVTYSCCPDTPYLDITVHFVQRL 210  
DB 181 VAINPESDQDPLSNFMESEGEWIKESRGWKHSVTYSCCPDTPYLDITVHFVQRL 235

## RESULT 5

AA06254  
ID AAR06254 standard; protein; 456 AA.  
XX  
AC AAR06254;  
XX  
DT 07-DEC-1990 (first entry)  
XX  
DE Human acetylcholine receptor TE671 (AChR) alpha-subunit.  
XX  
KW Nicotinic acetyl choline receptor; AChR; TE671; insecticides;  
KW Muscle relaxants; anthelmintics;  
XX  
OS Homo sapiens.  
XX  
PN CA2003459-A.  
XX  
PD 23-MAY-1990.  
XX  
PF 21-NOV-1989; 89CA-2003459.  
XX  
PR 23-NOV-1988; 88US-0275422.  
XX  
PA (SALK ) SALK INST FOR BIOL STUD.  
XX  
PI Lindstrom JM, Schoepfer RD;  
XX  
DR WPI; 1990-231525/31.  
XX  
PT Human muscle nicotinic acetylcholine receptor - used to assay  
PT the effects of agents which affect acetylcholine receptors in  
PT skeletal muscles.  
XX  
PS Disclosure; ; p; English.

XX  
CC Receptors may be used in assay for materials which modify them.  
CC They may be produced in substantial, pure quantities for use in  
CC experimentation, development of insecticides without effect on  
CC hMARS and treatment of parasitic infections. MABS raised to the  
CC peptides may be useful in detection of the structure of MARS.  
CC 24 unidentified residues are due to the poor quality of the  
CC sequence reproduction.  
XX  
SQ Sequence 456 AA;

Query Match 96.3%; Score 1100.5; DB 11; Length 456;  
Best Local Similarity 97.1%; Pred. No. 2.4e-106;  
Matches 204; Conservative 1; Mismatches 4; Indels 1; Gaps 1;

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DB 21 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQLQLINVDENVQIVTINVLKQW 80  
OY 61 VDYNLKNPDDYGGVKKIHPSEKIWRPDLVLYNNADGFAIVKFTKVLQVTHITWTP 120  
DB 81 VDYNLKNPDDYGG-KIHPSEKIWRPDLVLYNNADGFAIVKFTKVLQVTHITWTP 139  
OY 121 PAIFKSYCEIIVTHPPFDEQNCMKLGTWYDGSVAINPESDQDLSNFMESGEWVKE 180  
DB 140 PAIFKSYCEIIVTHPPFDEQNCMKLGTWYDGSVAINPESDQDLSNFMESGEWVKE 199  
OY 181 SRQWKHSVTYSCCPDTPYLDITYHFVQRL 210  
DB 200 SRQWKHSVTYSCCPDTPYLDITYHFVQRL 229

## RESULT 6

AAW83382  
ID AAW83382 standard; Protein; 230 AA.  
XX  
AC AAW83382;  
XX  
DT 19-FEB-1999 (first entry)

XX

DE

XX

KW

KW

KW

XX

OS

OS

PN

XX

PD

XX

PF

PR

XX

PA

XX

PI

DR

XX

XX

PT

PT

PT

PT

XX

PS

XX

CC

CC

CC

CC

CC

CC

CC

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CC

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CC

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CC

CC

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CC

CC

CC

CC

CC

XX

SQ

Sequence

230 AA;

Query Match

95.2%;

Score 1088.5;

DB 19;

Length 230;

Best Local Similarity

88.3%;

Pred. No. 1.7e-105;

Matches 203;

Conservative 1;

Mismatches 1;

Indels 25;

Gaps 1;

OY

1

SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQLQLINVDENVQIVTINVLKQW-- 58

DB

1

SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQLQLINVDENVQIVTINVLKQGD 60

OY

59

-----QWVDYNLKNPDDYGGVKKIHPSEKIWRPDLVLYNN 95

DB

61

MVDLPRPSCVTIGVPLFSLQDEQWVDYNLKNPDDYGGVKKIHPSEKIWRPDLVLYND 120

OY

96

ADGDFAIKFTKVLQVTHITWTPPAIFKSYCEIIVTHPPFDEQNCMKLGTWYDGSV 155

DB

121

ADGDFAIKFTKVLQVTHITWTPPAIFKSYCEIIVTHPPFDEQNCMKLGTWYDGSV 180

OY

156

VAINPESDQDLSNFMESGEWVKEISRGWKHSVTYSCCPDTPYLDITYHF 205

DB

181

VAINPESDQDLSNFMESGEWVKEISRGWKHSVTYSCCPDTPYLDITYHF 230

```
RESULT 7
AAR06256
ID AAR06256 standard; protein; 456 AA.
XX AC AAR06256;
XX
DT 07-DEC-1990 (first entry)
XX
DE Calf acetylcholine receptor (Achr) alpha-subunit.
XX
KW Nicotinic acetyl choline receptor; Achr; TE671; insecticides;
KW Muscle relaxants; anthelmintics;
XX
OS Bos taurus.
XX
PN CA2003459-A.
XX
PD 23-MAY-1990.
XX
PF 21-NOV-1989; 89CA-2003459.
XX
PR 23-NOV-1988; 88US-0275422.
XX
PA (SALK ) SALK INST FOR BIOL STUD.
XX
PI Lindstrom JM, Schoepfer RD;
XX
DR WPI; 1990-231525/31.
XX
PT Human muscle nicotinic acetyl:choline receptor - used to assay
PT the effects of agents which affect acetyl:choline receptors in
PT skeletal muscles.
XX
PS Disclosure; ; p; English.
XX
CC Receptors may be used in assay for materials which modify them.
CC They may be produced in substantial, pure quantities for use in
CC experimentation, development of insecticides without effect on
CC hMNARS and treatment of parasitic infections. Mabs raised to the
CC peptides may be useful in detection of the structure of MNARS.
CC 24 unidentified residues are due to the poor quality of the
CC sequence reproduction.
XX
SQ Sequence 456 AA;
Query Match 95.1%; Score 1086.5; DB 11; Length 456;
Best Local Similarity 95.7%; Pred. No. 7.1e-105;
Matches 201; Conservative 1; Mismatches 7; Indels 1; Gaps 1;
Qy 1 SEHETRLVAKLFKDYSSVVRPVEDHRQVETAGLQLIQLINVDENVQIVTTNVLKQOW 60
Db 21 SEHETRLVAKLFKDYSSVVRPVEDHRQVETAGLQLIQLINVDENVQIVTTNVLKQOW 80
Qy 61 VDYNLKNPDDYGGVKKTHIPSEKIWRPDLVLYNNADGDFAIKFKVLLQYTGHTWTP 120
Db 81 VDYNLKNPDDYGGVKKTHIPSEKIWRPDLVLYNNADGDFAIKFKVLLQYTGHTWTP 139
Qy 121 PAIFKSYCEIIVTHFPFQNCMKLGWTYDGSVVAINPESDQDPLSNFESGEWVKE 180
Db 140 PAIFKSYCEIIVTHFPFQNCVKLGHWYDGSVVAINPESDQDPLSNFESGEWVKE 199
Qy 181 SRGWKHSVYSCCPDTPYLDITYHFVMQRL 210
Db 200 SRQWKHSVYSCCPDTPYLDITYHFVMQRL 229
RESULT 8
AAR06255
ID AAR06255 standard; protein; 456 AA.
XX AC AAR06255;
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```
XX 07-DEC-1990 (first entry)
XX Mouse acetylcholine receptor (Achr) alpha-subunit.
XX Nicotinic acetyl choline receptor; Achr; TE671; insecticides;
KW Muscle relaxants; anthelmintics;
XX
OS Mus sp.
XX
PN CA2003459-A.
XX
PD 23-MAY-1990.
XX
PF 21-NOV-1989; 89CA-2003459.
XX
PR 23-NOV-1988; 88US-0275422.
XX
PA (SALK ) SALK INST FOR BIOL STUD.
XX
PI Lindstrom JM, Schoepfer RD;
XX
DR WPI; 1990-231525/31.
XX
PT Human muscle nicotinic acetyl:choline receptor - used to assay
PT the effects of agents which affect acetyl:choline receptors in
PT skeletal muscles.
XX
PS Disclosure; ; p; English.
XX
CC Receptors may be used in assay for materials which modify them.
CC They may be produced in substantial, pure quantities for use in
CC experimentation, development of insecticides without effect on
CC hMNARS and treatment of parasitic infections. Mabs raised to the
CC peptides may be useful in detection of the structure of MNARS.
CC 24 unidentified residues are due to the poor quality of the
CC sequence reproduction.
XX
SQ Sequence 456 AA;
Query Match 94.0%; Score 1074.5; DB 11; Length 456;
Best Local Similarity 93.8%; Pred. No. 1.3e-103;
Matches 197; Conservative 6; Mismatches 6; Indels 1; Gaps 1;
Qy 1 SEHETRLVAKLFKDYSSVVRPVEDHRQVETAGLQLIQLINVDENVQIVTTNVLKQOW 60
Db 21 SEHETRLVAKLFKDYSSVVRPVEDHRQVETAGLQLIQLINVDENVQIVTTNVLKQOW 80
Qy 61 VDYNLKNPDDYGGVKKTHIPSEKIWRPDLVLYNNADGDFAIKFKVLLQYTGHTWTP 120
Db 81 VDYNLKNPDDYGGVKKTHIPSEKIWRPDLVLYNNADGDFAIKFKVLLQYTGHTWTP 139
Qy 121 PAIFKSYCEIIVTHFPFQNCMKLGWTYDGSVVAINPESDQDPLSNFESGEWVKE 180
Db 140 PAIFKSYCEIIVTHFPFQNCVKLGHWYDGSVVAINPESDQDPLSNFESGEWVKE 199
Qy 181 SRGWKHSVYSCCPDTPYLDITYHFVMQRL 210
Db 200 SRQWKHSVYSCCPDTPYLDITYHFVMQRL 229
RESULT 9
AAR06257
ID AAR06257 standard; protein; 455 AA.
XX AC AAR06257;
XX
DT 07-DEC-1990 (first entry)
XX
DE Chicken acetylcholine receptor (Achr) alpha-subunit.
XX
KW Nicotinic acetyl choline receptor; Achr; TE671; insecticides;
KW Muscle relaxants; anthelmintics;
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XX OS Gallus sp.
XX PN CA2003459-A.
XX PD 23-MAY-1990.
XX PF 21-NOV-1989; 89CA-2003459.
XX PR 23-NOV-1988; 88US-0275422.
XX PA (SALK ) SALK INST FOR BIOL STUD.
XX PI Lindstrom JM, Schoepfer RD;
XX WPI; 1990-231525/31.
XX DR
XX PT Human muscle nicotinic acetylcholine receptor - used to assay
XX PT the effects of agents which affect acetylcholine receptors in
XX PT skeletal muscles.
XX PS Disclosure; ; p; English.
XX CC Receptors may be used in assay for materials which modify them.
XX CC They may be produced in substantial, pure quantities for use in
XX CC experimentation, development of insecticides without effect on
XX CC hmnars and treatment of parasitic infections. Mabs raised to the
XX CC peptides may be useful in detection of the structure of MNARS.
XX CC 22 unidentified residues are due to the poor quality of the
XX CC sequence reproduction.
XX SQ Sequence 455 AA;
    Query Match 84.8%; Score 969.5; DB 11; Length 455;
    Best Local Similarity 84.2%; Pred. No. 1.2e-92;
    Matches 176; Conservative 16; Mismatches 16; Indels 1; Gaps 1;
    QY 2 EHETRLVAKLFKDYSSVVRPVEDHQRQVETAGLQILQILINDEVNQIVTTNVLKQOW 61
    DB 21 EHETRLVDLLFREYSKVRPVENHRAVVTGVLQILQILINDEVNQIVTTNVLKQOW 80
    QY 62 DYLNKPNDDYGGVKVKKIHPSEKIRPDLVLYNNADGDFAIKFTKVLQYTGHTWTP 121
    DB 81 DINKLWNPDDYGG-VKIRPDDVIRPDLVLYNNADGDFAIKFTKVLQYTGHTWTP 139
    QY 122 AIFKSYCEIIVTHFPDEQNCMKLTWTYDGSVVAINPESDQPLSNFESGEWIKES 181
    DB 140 AIFKSYCEIIVTHFPDQNCVKLTWTYDGTVMVINPESDRPDLSNFESGEWYMKDY 199
    QY 182 RGWKHSVTYSCCPDTPYLDITYHFVQMRL 210
    DB 200 RGWKHSVTYSCCPDTPYLDITYHFVQMRL 228
    RESULT 10
    AAR36984
    ID AAR36984 standard; Protein; 449 AA.
    XX AC AAR36984;
    XX DT 24-SEP-1993 (first entry)
    XX DE Acetylcholine receptor protein, alpha subunit.
    KW Acetylcholine receptor; AChR; epitope; myasthenia gravis; human; MHC;
    KW mouse; MHC-peptide complex; subunit; antigen; binding site; receptor;
    KW T-cell; autoimmune disease; immune system; rheumatoid arthritis;
    KW multiple sclerosis; myasthenia gravis.
    XX OS Synthetic.
    XX FH Key
    FT Peptide 1..12
    Location/Qualifiers

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FT FT /note= "signal peptide"
FT FT 13..449
XX PN /note= "Mature protein"
XX PN W09309810-A.
XX PD 27-MAY-1993.
XX PF 18-NOV-1992; 92WO-US10031.
XX PR 19-NOV-1991; 91US-0793938.
XX PA (ANER-) ANERGEN INC.
XX PI Clark BR, McConnel HM, Nag B, Sharma SD;
XX WPI; 1993-182250/22.
XX N-PSDB; AAQ39941.
XX PT Complexes comprising antigenic peptide and major
XX PT histocompatibility complex sub-unit - for treatment and diagnosis
XX PT of immune diseases, e.g. rheumatoid arthritis, multiple sclerosis
XX PT and myasthenia gravis
XX PS Disclosure; Fig 3; 85pp; English.
XX CC This sequence represents the alpha subunit of acetylcholine receptor
XX CC protein. This sequence may be used in the construction of an
XX CC MHC-peptide complex which comprises an antigenic peptide, eg. AChR
XX CC peptide 193-215 or myelin basic protein peptide MBP(1-14)A4, and an
XX CC isolated MHC subunit component which has an antigen binding site,
XX CC where the antigenic peptide is associated with the antigen binding
XX CC site. The MHC-peptide complex selectively binds a T-cell receptor
XX CC on T-cells associated with diseases, esp. autoimmune diseases. The
XX CC coding sequence of this protein may be incorporated in to a sequence
XX CC encoding the subunit derived from the MHC antigen. The incorporated
XX CC site will be such that, when the subunit is expressed and folded, the
XX CC AChR peptide antigen will be available as an epitope for the target
XX CC T-cells. The complex may be used to identify and inhibit aspects of
XX CC the immune system which are responsible for undesirable immune
XX CC responses. They may be used for treating autoimmune disease such as
XX CC rheumatoid arthritis, multiple sclerosis or myesthnia gravis.
XX SQ Sequence 449 AA;
    Query Match 79.6%; Score 910; DB 14; Length 449;
    Best Local Similarity 75.2%; Pred. No. 2e-86;
    Matches 158; Conservative 26; Mismatches 26; Indels 0; Gaps 0;
    QY 1 SEHETRLVAKLFKDYSSVVRPVEDHQRQVETAGLQILQILINDEVNQIVTTNVLKQOW 60
    DB 13 SEHETRLVANLLENYNKVRPVEHHTFVDITVGLQILQILISVDEVNQIVETNVLKQOW 72
    QY 61 VDYLNKPNDDYGGVKVKKIHPSEKIRPDLVLYNNADGDFAIKFTKVLQYTGHTWTP 120
    DB 73 IDVRLRNPNADYGGIKIRPDDVIRPDLVLYNNADGDFAIKFTKVLQYTGHTWTP 132
    QY 121 PAIFKSYCEIIVTHFPDEQNCMKLTWTYDGSVVAINPESDQPLSNFESGEWIKES 180
    DB 133 PAIFKSYCEIIVTHFPDQNCVKLTWTYDGTVMVINPESDRPDLSNFESGEWYMKDY 199
    QY 181 SRGWKHSVTYSCCPDTPYLDITYHFVQMRL 210
    DB 193 YRGWKHVVYTCPPDTPYLDITYHFVQMRL 222
    RESULT 11
    AAR86421
    ID AAR86421 standard; Protein; 449 AA.
    XX AC AAR86421;
    XX DT 10-APR-1996 (first entry)

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```
XX DE Acetylcholine receptor alpha subunit.
XX DE
XX DE Acetylcholine receptor; autoantigen; MHC class II;
KW major histocompatibility complex; autoimmunity; autoimmune disease;
KW rheumatoid arthritis; myasthenia gravis; multiple sclerosis;
KW allograft rejection; vaccine.
XX OS
XX OS Torpedo californicus.
XX XX
XX PN US5468481-A.
XX XX
XX PD 21-NOV-1995.
XX XX
XX PF 23-JUN-1988; 88US-0210594.
XX PR 14-APR-1992; 92US-0869293.
XX PR 23-JUN-1988; 88US-0210594.
XX PR 21-JUN-1989; 89US-0367751.
XX PR 30-AUG-1990; 90US-0576084.
XX PR 28-DEC-1990; 90US-0635840.
XX PR 23-APR-1991; 91US-0690840.
XX PA
XX PA (AMER-) AMERGEN INC.
XX PI
XX PI Clark BR, Lerch BL, Sharma SD;
XX XX
XX DR WPI; 1996-010049/01.
XX DR N-PSDB; AAT06284.
XX PT
XX PT New MHC Class 2-peptide complex for inducing T cell
XX PT non-responsiveness - opt. including a toxin, esp. for treating
XX PT auto-immune disease such as rheumatoid arthritis
XX PS
XX PS Disclosure; Fig 6; 47pp; English.
XX CC
XX CC The alpha subunit of the electric ray acetylcholine receptor (AChR)
XX CC (AAR86421) is an autoantigen involved in the pathogenesis of myasthenia
XX CC gravis. AChR peptide segments, e.g. amino acids 195-215, can be used
XX CC in the construction of MHC class II-peptide conjugates. Such
XX CC conjugates are able to inhibit deleterious T-cell mediated immune
XX CC response, such as allergic reactions, allograft rejection, and
XX CC autoimmune diseases, or to promote T-cell responses for use as
XX CC vaccines.
XX SQ
XX SQ Sequence 449 AA;
Query Match 79.6%; Score 910; DB 17; Length 449;
Best Local Similarity 75.2%; Pred. No. 2e-86;
Matches 158; Conservative 26; Mismatches 26; Indels 0; Gaps 0;
QY 1 SEHETRLVAKLFKDYSSVVRVEDHROVVEVTAGLQLIQLINVDVNAQIVTTNVLRLKQOW 60
DB 13 SEHETRLVANLLENKYNKVRPEVHTFVDITVGLQLIQLISVDVNAQIVETNVLRLKQOW 72
QY 61 VDYNLKNPDDYGGVKKIHIPSEKIRWPDVLYNNADGDFAIKFTKVLQYTGHTITWTP 120
DB 73 IDVRLRNWPDYGGIKIRLPESDDVWLPDLVLYNNADGDFAIKFTKVLQYTGHTITWTP 132
QY 121 PAIFKSYCEIIVTHFPFDEQNCMKLTWTYDGSVVAINPESDQDLSNEMESGEWVKE 180
DB 133 PAIFKSYCEIIVTHFPFDEQNCMKLTWTYDGSVVAINPESDQDLSNEMESGEWVKE 192
QY 181 SRGKKHSVYSCCPDTPYLDITVHFVQRL 210
DB 193 YRGWKHWVYVTCPPDTPYLDITVHFVQRI 222
RESULT 12
AAP40417
ID AAP40417 standard; protein; 461 AA.
XX
AC AAP40417;
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XX XX 22-JUL-1992 (first entry)
XX DE Acetyl choline acceptor protein.
XX XX
XX KW Peptides; immunogenic.
XX OS
XX OS Homo sapiens.
XX XX
XX FH Location/Qualifiers
XX FT 1..24
XX FT Region
XX FT Peptide
XX FT /label= signal_peptide
XX FT /note= "Immunogenic peptide"
XX FT 98..103
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 95..100
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 103..108
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 108..113
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 175..180
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 192..196
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 209..214
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 251..256
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 315..320
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 344..354
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 381..387
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX FT 401..406
XX FT Peptide
XX FT /note= "Immunogenic peptide"
XX XX
XX XX JP59130254-A.
XX XX
XX XX 26-JUL-1984.
XX XX
XX XX 16-AUG-1983; 83JP-0523787.
XX XX
XX XX 16-AUG-1983; 83US-0523787.
XX XX
XX XX (MITU ) MITSUBISHI CHEM IND KK.
XX XX
XX XX WPI; 1984-265833/43.
XX XX
XX XX New polypeptide(s) - with immuno activity similar to acetyl choline
XX XX acceptor
XX XX
XX XX Disclosure; Fig 1; 12pp; Japanese.
XX XX
XX XX The polypeptides have immunoactivity similar to that of the acetyl
XX XX choline acceptor. They may be prepd. by solid phase synthesis.
XX XX
XX XX Sequence 461 AA;
Query Match 79.6%; Score 910; DB 5; Length 461;
Best Local Similarity 75.2%; Pred. No. 2.1e-86;
Matches 158; Conservative 26; Mismatches 26; Indels 0; Gaps 0;
QY 1 SEHETRLVAKLFKDYSSVVRVEDHROVVEVTAGLQLIQLINVDVNAQIVTTNVLRLKQOW 60
DB 25 SEHETRLVANLLENKYNKVRPEVHTFVDITVGLQLIQLISVDVNAQIVETNVLRLKQOW 84
QY 61 VDYNLKNPDDYGGVKKIHIPSEKIRWPDVLYNNADGDFAIKFTKVLQYTGHTITWTP 120
DB 85 IDVRLRNWPDYGGIKIRLPESDDVWLPDLVLYNNADGDFAIKFTKVLQYTGHTITWTP 144
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QY 121 PAIFKSYCEIIVTHFPFQONCSMKLGITWTYDGSVVAINPESQDPDLSTFMESGEWVKE 180  
 DB 145 PAIFKSYCEIIVTHFPFQONCSMKLGITWTYDGSVVAINPESQDPDLSTFMESGEWVAKD 204  
 QY 181 SRGWKHSVTYSCPDTPYLDITYHFVMOQL 210  
 DB 205 YRGWKHWWYTCPPDTPYLDITYHFIMQRI 234

RESULT 13  
 AAR35057  
 ID AAR35057 standard; Protein; 449 AA.  
 XX AAR35057;  
 DT 21-MAY-1993 (first entry)  
 DE Alpha subunit of Torpedo californicus AChR (known).  
 XX  
 KW Acetylcholine receptor; epitope; myasthenia gravis; MG; antigen;  
 binding site; MHC; IAB; alpha; beta; RAMPS; Torpedo californicus.  
 XX  
 OS Synthetic.  
 FH Key Location/Qualifiers  
 FT Peptide 1..12  
 FT /label= sig\_peptide  
 FT Protein 13..449  
 FT /label= mat\_protein  
 XX  
 PN W09218150-A.  
 XX  
 PD 29-OCT-1992.  
 XX  
 PF 23-APR-1992; 92WO-US03391.  
 XX  
 PR 23-APR-1991; 91US-0690840.  
 XX  
 PA (ANER-) ANERGEN INC.  
 XX  
 PI Clark BR, Lerch BL, Sharma SD;  
 XX  
 DR WPI; 1993-036056/04.  
 DR N-PSDB; AAQ35053.  
 XX  
 PT Pure major MHC-peptide complex - useful in treating deleterious  
 immune response such as auto:immunity  
 XX  
 PS Disclosure; Fig 6; 93pp; English.  
 XX  
 CC The Dupont apparatus and technique for rapid multiple peptide  
 synthesis (RAMPS) is used to synthesise the members of a set of  
 overlapping (10 residue overlap), 20 residue peptides form the alpha  
 subunit of Torpedo californicus AChR.  
 CC  
 CC The AChR peptide 195-215, which has been characterised as an epitope  
 in myasthenia gravis (MG) in humans and in mice, may be connected to  
 the N-terminal antigen binding site of a polypeptide derived from an MHC  
 antigen associated with MG. For example, if the recombinant complex is  
 to be used in mice, the AChR peptide may be incorporated into a sequence  
 encoding either the I-Ab-alpha or I-Ab-beta chain (see AAQ35054-55  
 respectively). If the AChR peptide is to be incorporated into the beta  
 chain, for example, the oligonucleotide may be inserted as a replacement  
 for the leader sequence.

XX Sequence 449 AA;  
 Query Match 79.08; Score 903; DB 14; Length 449;  
 Best Local Similarity 74.88; Pred. No. 1.le-85;  
 Matches 157; Conservative 26; Mismatches 27; Indels 0; Gaps 0;  
 QY 1 SEHETRLVAKFKDYSSVVRPVEDHQRQVVEVTAGLIQLINVDVNOIVTNNRLKQOW 60  
 DB 13 SEHETRLVANLENNYKVIPIPVVEHHTHFVDITVGLQLQLISVDVNOIVETNRLRQOW 72

QY 61 VDYNLKWNPDYGGVKKIHPSEKIWRPDLVLYNNADGFAIVKFTKVLQYTGHTTWP 120  
 DB 73 IDVRLRNWPNADYGGIKIRLPSSDDVWLPLVLYNNADGFAIVHMTKLLDYGKIMWTP 132  
 QY 121 PAIFKSYCEIIVTHFPFQONCSMKLGITWTYDGSVVAINPESQDPDLSTFMESGEWVKE 180  
 DB 133 PAIFKSYCEIIVTHFPFQONCSMKLGITWTYDGSVVAINPESQDPDLSTFMESGEWVMD 192  
 QY 181 SRGWKHSVTYSCPDTPYLDITYHFVMOQL 210  
 DB 193 YRGWKHWWYTCPPDTPYLDITYHFIMQRI 222

RESULT 14  
 AAR45946  
 ID AAR45946 standard; Protein; 449 AA.  
 XX AAR45946;  
 AC AAR45946;  
 DT 08-JUL-1994 (first entry)  
 DE Acetylcholine receptor alpha subunit.  
 XX  
 KW MHC; major histocompatibility complex; toxic conjugate;  
 autoimmunity; autoimmune disease; helper T-cell; T-lymphocyte;  
 acetylcholine receptor; myelin basic protein; I-Ab.  
 XX  
 OS Torpedo californicus.  
 XX  
 PN US5284935-A.  
 XX  
 PD 08-FEB-1994.  
 XX  
 PF 23-JUN-1988; 88US-0210594.  
 XX  
 PR 23-JUN-1988; 88US-0210594.  
 PR 21-JUN-1989; 89US-0367751.  
 PR 30-AUG-1990; 90US-0576084.  
 PR 28-DEC-1990; 90US-0635840.  
 XX  
 PA (ANER-) ANERGEN INC.  
 XX  
 PI Clark BR, Lerch LB, Sharma SD;  
 XX  
 DR WPI; 1994-056406/07.  
 DR N-PSDB; AAQ56918.  
 XX  
 PT MHC-mediated toxic peptide conjugates - useful for ameliorating  
 auto-immunity  
 XX  
 PS Disclosure; Fig 6.1-6.4; 42pp; English.  
 XX  
 CC The acetylcholine receptor alpha subunit given in sequence AAR45946  
 (corresponding mRNA in AAQ56918) and the myelin basic protein given in  
 AAR45947 are antigenic peptides associated with autoantigens. They  
 have been conjugated with MHC class II components such as I-Ab-  
 alpha chain (encoded by MHC class II components such as I-Ab-  
 alpha chain (encoded by sequence AAQ56919) or I-Ab-beta chain,  
 (encoded by AAQ56920) and a toxin or label to form conjugates used  
 to target helper T-cells for the treatment of autoimmune diseases.

XX Sequence 449 AA;  
 Query Match 77.48; Score 885; DB 15; Length 449;  
 Best Local Similarity 74.48; Pred. No. 8.2e-84;  
 Matches 157; Conservative 26; Mismatches 26; Indels 2; Gaps 2;  
 QY 1 SEHETRLVAKFKDYSSVVRPVEDHQRQVVEVTAGLIQLINVDVNOIVTNNRLKQOW 60  
 DB 13 SEHETRLVANLENNYKVIPIPVVEHHTHFVDITVGLQLQLISVDVNOIVETNRLRQOW 72  
 QY 61 VDYNLKWNPDYGGVKKIHPSEKIWRPDLVLYNNADGFAIVKFTKVLQYTGHTTWP 119  
 DB 73 IDVRLRNWPNADYGGIKIRLPSSDDVWLPLVLYNNADGFAIVHMTKLLDYGKIMWTP 132

Db 73 IDVRLRNADYGGIKIRLPDDVWLPDLVLYNNADGDFAIHVHTKLLLDYTGKIMMWT 132  
Qy 120 PPAIFKSYCEIIVTHFPFDEQNCMKLGWTYDGSVVAINPESDQDPLSNFMESGEWVIK 179  
Db 133 PPAIFKSYCE--IVTHFPFDEQNCMKLGWTYDGTGKVSISPESDRDPLSTFMESGEWVMK 191  
Qy 180 ESRGWKHSVTYSCCPDTPYLDITYHFVQMRL 210  
Db 192 DYRGWKHWYTCCTPDPYLDITYHFIMQRI 222

RESULT 15

AAR06259  
ID AAR06259 standard; protein; 460 AA.

XX AC AAR06259;

XX DT 07-DEC-1990 (first entry)

XX DE Fish acetylcholine receptor (AChR) alpha-subunit.

XX KW Nicotinic acetyl choline receptor; AChR; TE671; insecticides;  
XX KW Muscle relaxants; anthelmintics;

XX OS Torpedo sp.

XX PN CA2003459-A.

XX PD 23-MAY-1990.

XX PF 21-NOV-1989; 89CA-2003459.

XX PR 23-NOV-1988; 88US-0275422.

XX PA (SALK ) SALK INST FOR BIOL STUD.

XX PI Lindstrom JM, Schoepfer RD;

XX DR WPI; 1990-231525/31.

XX PT Human muscle nicotinic acetyl:choline receptor - used to assay  
PT the effects of agents which affect acetyl:choline receptors in  
PT skeletal muscles.

XX PS Disclosure; ; P; English.

XX CC Receptors may be used in assay for materials which modify them.  
CC They may be produced in substantial, pure quantities for use in  
CC experimentation, development of insecticides without effect on  
CC hMNARs and treatment of parasitic infections. MABS raised to the  
CC peptides may be useful in detection of the structure of MNARs.  
CC Unidentified residues are due to the poor quality of the  
CC sequence reproduction.

XX SQ Sequence 460 AA;

Query Match 73.9%; Score 845; DB 11; Length 460;  
Best Local Similarity 71.9%; Pred. No. 1.3e-79;  
Matches 151; Conservative 20; Mismatches 39; Indels 0; Gaps 0;

Qy 1 SEHETRLVAKLFKDYSSVVRVEDHROVVEVTAGLQLQLINVDVNOIVTNRVKQOW 60  
Db 25 SEHETRLVANLKNLENVIRCEHTEHFDITVGLQLQLISVDVNOIVETNRVKQOW 84  
Qy 61 VDNLKNPDDYGGVKKIHPSEKIWRPDLVLYNNADGDFAIKFTKVLQYTGHTWTP 120  
Db 85 IDVRLRNADYGGIKIRLPDDVWLPDLVLYNNADGDFAIHVHTKLLLDYTGKIMMWT 144  
Qy 121 PPAIFKSYCEIIVTHFPFDEQNCMKLGWTYDGSVVAINPESDQDPLSNFMESGEWVIK 180  
Db 145 PPAIFKSYCEIIVTHFPFDEQNCXXLGTWYDGTGKVSINPESDQDPLSTFDYGEWIXE 204  
Qy 181 SRGWKHSVTYSCCPDTPYLDITYHFVQMRL 210

Db 205 SRGWKHSVTYTCCTPDPYLDITYHFIMQRL 234  
Search completed: January 14, 2003, 16:53:40  
Job time : 142 secs



GenCore version 5.1.3  
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OM protein - protein search, using sw model

Run on: January 14, 2003, 16:51:18 ; Search time 49 Seconds  
(without alignments)  
412.005 Million cell updates/sec

Title: US-09-820-339A-2

Perfect score: 1143

Sequence: 1 SEHETRLVAKLFKDYSSVVR.....SCPDTPYLDIYHFVQRL 210

Scoring table:

BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 283224 seqs, 96134422 residues

Total number of hits satisfying chosen parameters: 283224

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database :

PIR 73:\*

1: Pirl:\*

2: Pirl2:\*

3: Pirl3:\*

4: Pirl4:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	1139	99.7	457	1 ACHUA1	nicotinic acetylch
2	1096	95.9	445	2 I49458	acetylcholine rece
3	1096	95.9	457	1 ACBOA1	nicotinic acetylch
4	1095	95.8	457	2 S13872	nicotinic acetylch
5	1093	95.6	457	2 A24383	nicotinic acetylch
6	993	86.0	456	1 ACCHN1	nicotinic acetylch
7	915	80.1	255	2 A93440	nicotinic acetylch
8	915	80.1	461	2 I50548	acetylcholine rece
9	910	79.6	461	1 ACRVA1	nicotinic acetylch
10	888	77.7	457	2 A28529	nicotinic acetylch
11	875	76.6	457	2 S08162	nicotinic acetylch
12	594.5	52.0	499	2 A24572	nicotinic acetylch
13	594.5	52.0	503	2 A53956	nicotinic acetylch
14	588.5	51.5	495	2 S60589	acetylcholine rece
15	588.5	51.0	502	2 A37040	nicotinic acetylch
16	582.5	51.0	625	2 A26456	nicotinic acetylch
17	577.5	50.5	627	2 JC4021	nicotinic acetylch
18	574.5	50.3	494	2 T09289	nicotinic acetylch
19	571.5	50.0	512	2 B37014	nicotinic acetylch
20	571.5	50.0	622	1 ACCHN1	nicotinic acetylch
21	571	50.0	468	2 A38223	nicotinic acetylch
22	564.5	49.4	511	2 A40110	nicotinic acetylch
23	564	49.3	452	2 A35721	nicotinic acetylch
24	562.5	49.2	528	1 ACCHN1	nicotinic acetylch
25	553.5	48.4	462	2 S06893	nicotinic acetylch
26	552	48.3	567	1 ACFFA1	nicotinic acetylch
27	544	47.6	454	2 B39218	nicotinic acetylch
28	532.5	46.6	455	2 A55972	nicotinic acetylch
29	532.5	46.6	455	2 S51116	nicotinic acetylch

30	532.5	46.6	454	2 A35233	nicotinic acetylch
31	522.5	45.7	576	1 ACFFA2	nicotinic acetylch
32	520.5	45.5	466	2 S16333	nicotinic acetylch
33	518.5	45.4	423	2 I38056	nicotinic acetylch
34	514.5	45.0	565	2 T23843	hypothetical prote
35	508	44.4	557	2 S12359	nicotinic acetylch
36	503	44.0	500	2 S12899	nicotinic acetylch
37	479	41.9	491	1 ACCHN1	nicotinic acetylch
38	479	41.9	503	2 JH0174	nicotinic acetylch
39	477.5	41.8	521	1 ACFFN1	nicotinic acetylch
40	472	41.3	502	2 S10505	nicotinic acetylch
41	469.5	41.1	479	2 A55382	nicotinic acetylch
42	469	41.0	470	2 A39218	nicotinic acetylch
43	467.5	40.9	511	2 T43634	nicotinic acetylch
44	463.5	40.6	534	2 T25720	hypothetical prote
45	461.5	40.4	416	1 ACCHN1	nicotinic acetylch

ALIGNMENTS

RESULT 1

ACHUA1

nicotinic acetylcholine receptor alpha-1 chain precursor, muscle - human

C;Species: Homo sapiens (man)

C;Date: 18-Apr-1984 #sequence\_revision 18-Apr-1984 #text\_change 22-Jun-1999

C;Accession: A03168; S00238; A27591

R;Noda, M.; Furutani, Y.; Takahashi, H.; Toyosato, M.; Tanabe, T.; Shimizu, S.; Kikyo

Nature 305, 818-823, 1983

A;Title: Cloning and sequence analysis of calf cDNA and human genomic DNA encoding al

A;Reference number: A03168; MUID:84039794; PMID:6688857

A;Accession: A03168

A;Molecule type: DNA

A;Residues: 1-457 <NOD>

A;Cross-references: GB:X02502; NID:g28291; PIDN:CAA26344.1; PID:g669153

R;Schoepfer, R.; Luther, M.; Lindstrom, J.

FEBS Lett. 226, 235-240, 1988

A;Title: The human medulloblastoma cell line T671 expresses a muscle-like acetylcholin

A;Reference number: S00238; MUID:88112190; PMID:3338555

A;Accession: S00238

A;Molecule type: mRNA

A;Residues: 1-457 <SCH>

A;Cross-references: EMBL:Y00762; NID:g28308; PIDN:CAA68731.1; PID:g28309

R;Hohlfeld, R.; Toyka, K.V.; Miner, L.L.; Walgrave, S.L.; Conti-Tronconi, B.M.

J. Clin. Invest. 81, 657-660, 1988

A;Title: Amphipathic segment of the nicotinic receptor alpha subunit contains epitope

A;Reference number: A27591; MUID:88139764; PMID:2449458

A;Contents: annotation

C;Genetics:

A;Gene: GDB:CHRNA1; CHRNA

A;Cross-references: GDB:120586; OMIM:100690

A;Map position: 2q24-2q32

A;Introns: 15/1; 63/3; 78/3; 115/2; 180/3; 260/1; 334/3; 414/3

C;Complex: the functional receptor molecule is a heteropentamer with two alpha chains

C;Superfamily: acetylcholine receptor

C;Keywords: alternative splicing; glycoprotein; heteropentamer; ion channel; neurotra

F;1-20/Domain: signal sequence #status predicted <SIG>

F;21-457/Product: nicotinic acetylcholine receptor alpha chain #status predicted <MAT

F;231-257/Domain: transmembrane #status predicted <TM1>

F;263-281/Domain: transmembrane #status predicted <TM2>

F;297-318/Domain: transmembrane #status predicted <TM3>

F;429-447/Domain: transmembrane #status predicted <TM4>

F;148-162/Disulfide bonds: #status predicted

F;161/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 99.7%; Score 1139; DB 1; Length 457;

Best Local Similarity 99.5%; Pred. No. 4.7e-97;

Matches 209; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 1 SEHETRLVAKLFKDYSSVVRPEHROVVEVTAGLQIQLINVDVNAQIVTNNRLKQOW 60

DB 21 SEHETRLVAKLFKDYSSVVRPEHROVVEVTAGLQIQLINVDVNAQIVTNNRLKQOW 80

QY 61 VDYNLKWPDDYGGVKKIHIPSEKIWRPDLVLYNNADGDFALVKTQVLLQYTGHTITWTP 120  
|||||  
Db 81 VDYNLKWPDDYGGVKKIHIPSEKIWRPDLVLYNNADGDFALVKTQVLLQYTGHTITWTP 140  
|||||  
QY 121 PAIFKSYCEIIVTHPPFDEQNCMKLGTWTYDGSVVAINPESDQDPLSNFMESGEWVIKE 180  
|||||  
Db 141 PAIFKSYCEIIVTHPPFDEQNCMKLGTWTYDGSVVAINPESDQDPLSNFMESGEWVIKE 200  
|||||  
QY 181 SRGWKHSVTYSCCPDTPYLDITYHFVMQRL 210  
|||||  
Db 201 SRGWKHSVTYSCCPDTPYLDITYHFVMQRL 230  
|||||

## RESULT 2

I49458

acetylcholine receptor alpha-subunit - mouse (fragment)

A:Species: Mus musculus (house mouse)

C:Date: 02-Jul-1996 #sequence\_revision 02-Jul-1996 #text\_change 30-May-1997

C:Accession: I49458

R:Boulter, J.; Luyten, W.; Evans, K.; Mason, P.; Ballivet, M.; Goldman, D.; Stengelin, S.

J. Neurosci. 5, 2545-2552, 1985

Title: Isolation of a clone coding for the alpha-subunit of a mouse acetylcholine receptor

Reference number: I49458; MUID:85292055; PMID:2993547

A:Accession: I49458

A:Status: preliminary; translated from GB/EMBL/DBJ

A:Molecule type: mRNA

A:Residues: 1-445 &lt;RES&gt;

A:Cross-references: GB:M17640; NID:g191601; PID:g191602

C:Superfamily: acetylcholine receptor

C:Keywords: neurotransmitter receptor

Query Match 95.9%; Score 1096; DB 2; Length 445;  
Best Local Similarity 94.8%; Pred. No. 4.2e-93;  
Matches 199; Conservative 6; Mismatches 5; Indels 0; Gaps 0;

QY 1 SEHETRLVAKLFKDYSSVVRPVEDHRQVETAGLQIQLINVDENVQIVTNNVRLKQOW 60  
|||||  
Db 9 SEHETRLVAKLFEDYSSVVRPVEDHRQVETAGLQIQLINVDENVQIVTNNVRLKQOW 68  
|||||  
QY 61 VDYNLKWPDDYGGVKKIHIPSEKIWRPDLVLYNNADGDFALVKTQVLLQYTGHTITWTP 120  
|||||  
Db 69 VDYNLKWPDDYGGVKKIHIPSEKIWRPDLVLYNNADGDFALVKTQVLLQYTGHTITWTP 128  
|||||  
QY 121 PAIFKSYCEIIVTHPPFDEQNCMKLGTWTYDGSVVAINPESDQDPLSNFMESGEWVIKE 180  
|||||  
Db 129 PAIFKSYCEIIVTHPPFDEQNCMKLGTWTYDGSVVAINPESDQDPLSNFMESGEWVIKE 188  
|||||  
QY 181 SRGWKHSVTYSCCPDTPYLDITYHFVMQRL 210  
|||||  
Db 189 ARGWAKHWVFYSCCPDTPYLDITYHFVMQRL 218  
|||||

## RESULT 3

ACBOAL

nicotinic acetylcholine receptor alpha chain precursor - bovine

A:Species: Bos primigenius taurus (cattle)

C:Date: 18-Apr-1984 #sequence\_revision 18-Apr-1984 #text\_change 22-Jun-1999

C:Accession: A03169

R:Noda, M.; Furutani, Y.; Takahashi, H.; Toyosato, M.; Tanabe, T.; Shimizu, S.; Kikuyama

Nature 305, 818-823, 1983

A:Title: Cloning and sequence analysis of calf cDNA and human genomic DNA encoding alpha

A:Reference number: A03169; MUID:84039794; PMID:6688857

A:Accession: A03169

A:Molecule type: mRNA

A:Residues: 1-457 &lt;NOD&gt;

A:Cross-references: GB:X02509; NID:g49; PIDN:CAA26345.1; PID:g50

A:Note: four hydrophobic transmembrane segments are found in each of the four kinds of c

-318, and 429-447 in the alpha chain

C:Comment: The functional receptor molecule has two alpha chains and one each of the bet

C:Superfamily: acetylcholine receptor

C:Keywords: glycoprotein; ion channel; membrane protein; neurotransmitter receptor; post

F:1-20/Domain: signal sequence #status predicted &lt;SIG&gt;

F:21-457/Product: nicotinic acetylcholine receptor alpha chain #status predicted &lt;MAT&gt;

F:148-162/Disulfide bonds: #status predicted  
F:161/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 95.9%; Score 1096; DB 1; Length 457;  
Best Local Similarity 95.2%; Pred. No. 4.3e-93;  
Matches 200; Conservative 3; Mismatches 7; Indels 0; Gaps 0;

QY 1 SEHETRLVAKLFKDYSSVVRPVEDHRQVETAGLQIQLINVDENVQIVTNNVRLKQOW 60  
|||||  
Db 21 SEHETRLVAKLFEDYSSVVRPVEDHRQVETAGLQIQLINVDENVQIVTNNVRLKQOW 80  
|||||  
QY 61 VDYNLKWPDDYGGVKKIHIPSEKIWRPDLVLYNNADGDFALVKTQVLLQYTGHTITWTP 120  
|||||  
Db 81 VDYNLKWPDDYGGVKKIHIPSEKIWRPDLVLYNNADGDFALVKTQVLLQYTGHTITWTP 140  
|||||  
QY 121 PAIFKSYCEIIVTHPPFDEQNCMKLGTWTYDGSVVAINPESDQDPLSNFMESGEWVIKE 180  
|||||  
Db 141 PAIFKSYCEIIVTHPPFDEQNCMKLGTWTYDGSVVAINPESDQDPLSNFMESGEWVIKE 200  
|||||  
QY 181 SRGWKHSVTYSCCPDTPYLDITYHFVMQRL 210  
|||||  
Db 201 SRGWKHWVFYACCPSTPYLDITYHFVMQRL 230  
|||||

## RESULT 4

SI3872

nicotinic acetylcholine receptor alpha chain precursor - rat

A:Species: Rattus norvegicus (Norway rat)

C:Date: 19-Mar-1997 #sequence\_revision 19-Mar-1997 #text\_change 20-Aug-1999

C:Accession: SI3872

R:Witzemann, V.; Stein, E.; Barg, B.; Konno, T.; Koenen, M.; Kues, W.; Criado, M.; Ho

Eur. J. Biochem. 194, 437-448, 1990

A:Title: Primary structure and functional expression of the alpha-, beta-, gamma-, de

A:Reference number: SI3872; MUID:91099317; PMID:1702709

A:Accession: SI3872

A:Status: preliminary

A:Molecule type: mRNA

A:Residues: 1-457 &lt;WIT&gt;

A:Cross-references: EMBL:X74832; NID:g398831; PIDN:CAA52826.1; PID:g398832

C:Superfamily: acetylcholine receptor

Query Match 95.8%; Score 1095; DB 2; Length 457;  
Best Local Similarity 94.8%; Pred. No. 5.3e-93;  
Matches 199; Conservative 6; Mismatches 5; Indels 0; Gaps 0;

QY 1 SEHETRLVAKLFKDYSSVVRPVEDHRQVETAGLQIQLINVDENVQIVTNNVRLKQOW 60  
|||||  
Db 21 SEHETRLVAKLFKDYSSVVRPVEDHRQVETAGLQIQLINVDENVQIVTNNVRLKQOW 80  
|||||  
QY 61 VDYNLKWPDDYGGVKKIHIPSEKIWRPDLVLYNNADGDFALVKTQVLLQYTGHTITWTP 120  
|||||  
Db 81 VDYNLKWPDDYGGVKKIHIPSEKIWRPDLVLYNNADGDFALVKTQVLLQYTGHTITWTP 140  
|||||  
QY 121 PAIFKSYCEIIVTHPPFDEQNCMKLGTWTYDGSVVAINPESDQDPLSNFMESGEWVIKE 180  
|||||  
Db 141 PAIFKSYCEIIVTHPPFDEQNCMKLGTWTYDGSVVAINPESDQDPLSNFMESGEWVIKE 200  
|||||  
QY 181 SRGWKHSVTYSCCPDTPYLDITYHFVMQRL 210  
|||||  
Db 201 ARGWAKHWVFYSCCPDTPYLDITYHFVMQRL 230  
|||||

## RESULT 5

A24383

nicotinic acetylcholine receptor alpha chain precursor - mouse

A:Species: Mus musculus (house mouse)

C:Date: 24-Jun-1987 #sequence\_revision 24-Jun-1987 #text\_change 15-Jun-1996

C:Accession: A24383

R:Isenberg, K.E.; Mudd, J.; Shah, V.; Merlie, J.P.

Nucleic Acids Res. 14, 5111, 1986

A:Reference number: A24383; MUID:86259081; PMID:3755237

A:Accession: A24383

A:Molecule type: mRNA

**Qy** 62 DYNLKNPDDYGGVKKIHIPSEKIWRPDLVLNNADGDFAIKFTKVLLQYTGHITWTP 121  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Db** 81 DINLKNPDDYGGVKQIRIPSDILWRPDLVLNNADGDFAIKFTKVLLHETGKITWTP 140  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Qy** 122 AIFKSCEIIIVTHFPDEONCSMKLGTTWTDGVSVAINPSDQPDLSNFMESGEWKES 181  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Db** 141 AIFKSCEIIIVTFFPDQNCNMKGTTWTDGTMVINPESDRPDLSTNFMESGEWMKY 200  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Qy** 182 RGWKHSVTYSCCPTPYLDITYHFVMQL 210  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Db** 201 RGWKHWYYACCPDPYLDITYHFLMQL 229  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**RESULT 7**  
**A93440**  
nicotinic acetylcholine receptor alpha chain precursor - marbled electric ray (fragment)  
C:Species: Torpedo marmorata (marbled electric ray)  
C>Date: 31-Dec-1991 #sequence\_revision 31-Dec-1991 #text\_change 15-Jun-1996  
C:Accession: A93440; A03170  
R:Sumikawa, K.; Houghton, M.; Smith, J.C.; Bell, L.; Richards, B.M.; Barnard, E.A.  
Nucleic Acids Res. 10, 5809-5822, 1982  
A>Title: The molecular cloning and characterisation of cDNA coding for the alpha subunit  
A:Reference number: A93440; MUID:83064520; PMID:6183641  
A:Accession: A93440  
A:Molecule type: mRNA  
A:Residues: 1-255 <SDM>  
C:Comment: The functional receptor molecule has two alpha chains and one each of the chain is 40,000.  
C:Superfamily: acetylcholine receptor  
C:Keywords: glycoprotein; ion channel; neurotransmitter receptor; postsynaptic membrane

**Query Match** 80.1%; Score 915; DB 2; Length 255;  
**Best Local Similarity** 75.7%; Pred. No. 9.5e-77;  
**Matches** 159; Conservative 25; Mismatches 26; Indels 0; Gaps 0;

**Qy** 1 SEHETRVLAKFKDYSSVRPVEDHRQVEVTAGLIQLINVDENVQIVTVNLRLQQW 60  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Db** 25 SEHETRVLANLENYKVRPVEHTFVDITVGTLQLINVDENVQIVETNVLRLQQW 84  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Qy** 61 DYNLKNPDDYGGVKKIHIPSEKIWRPDLVLNNADGDFAIKFTKVLLQYTGHITWTP 120  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Db** 85 IDVLRLNPADYGIGIKIRLPDSDDVLPDLVLNNADGDFAIKFTKVLLQYTGHIMWTP 144  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Qy** 121 PAIFSCEIIIVTHFPDEONCSMKLGTTWTDGVSVAINPSDQPDLSNFMESGEWKIE 180  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Db** 145 PAIFSCEIIIVTHFPDQNCNMKGITWTDGTKVISPESDRPDLSTNFMESGEWMKD 204  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Qy** 181 SRGWKHSVTYSCCPTPYLDITYHFVMQL 210  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**Db** 205 YRGWKHWYYTCPPDPYLDITYHFIMQRI 234  
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | : | | | | |  
**RESULT 8**  
**I50348**  
acetylcholine receptor alpha-subunit - marbled electric ray  
C:Species: Torpedo marmorata (marbled electric ray)  
C>Date: 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change 20-Aug-1999  
C:Accession: I50348  
R:Devillers-Thierry, A.; Giraudat, J.; Bentabollet, M.; Klarsfeld, A.; Changeux, J.P.  
Adv. Exp. Med. Biol. 181, 17-29, 1984  
A>Title: Molecular genetics of Torpedo marmorata acetylcholine receptor.  
A:Reference number: I50348; MUID:85171452; PMID:6549423  
A:Accession: I50348  
A>Status: preliminary; translated from GB/EMBL/DDBJ  
A:Molecule type: mRNA  
A:Residues: 1-461 <DEV>  
C:CROSS-references: GB:M25893; NID:g213215; PIDN:AAA96704.1; PID:g213216  
C:Superfamily: acetylcholine receptor  
C:Keywords: neurotransmitter receptor

**Query Match** 80.1%; Score 915; DB 2; Length 461;  
**Best Local Similarity** 75.7%; Pred. No. 2.1e-76;  
**Matches** 159; Conservative 25; Mismatches 26; Indels 0; Gaps 0;

[illegible]

nicotinic acetylcholine receptor alpha chain precursor - Pacific electric ray  
Species: Torpedo californica (Pacific electric ray)  
Date: 30-Apr-1982 #sequence\_revision 05-Apr-1983 #text\_change 22-Jun-1999  
C:Accession: A03170; A20972; A33555; A41587; A54233  
R:Noda, M.; Takahashi, H.; Tanabe, T.; Toyosato, M.; Furutani, Y.; Hirose, T.; Asai, M.  
Nature 299, 793-797, 1982  
A:Title: Primary structure of alpha-subunit precursor of Torpedo californica acetylcholine receptor  
A:Reference number: A93290; MUID:83036943; PMID:6182472  
A:Accession: A03170  
A:Molecule type: mRNA  
A:Residues: 1-461 <NOD>  
A:Cross-references: GB:J00963; GB:M14810; NID:G213217; PIDN:AAA96705.1; PID:G213218  
R:Conti-Tronconi, B.M.; Hunkapiller, M.W.; Raftery, M.A.  
Proc. Natl. Acad. Sci. U.S.A. 81, 2631-2634, 1984  
A:Title: Molecular weight and structural nonequivalence of the mature alpha subunits of Torpedo californica acetylcholine receptor  
A:Reference number: A20972; MUID:84194060; PMID:6585820  
A:Accession: A20972  
A:Molecule type: protein  
A:Residues: 25-137;336-421;429-450 <CON>  
R:Moore, C.R.; Yates III, J.R.; Griffin, P.R.; Shabanowitz, J.; Martino, P.A.; Hunt, D.B.  
Biochemistry 28, 9184-9191, 1989  
A:Title: Proteolytic fragments of the nicotinic acetylcholine receptor identified by mass spectrometry  
A:Reference number: A33555; MUID:90105466; PMID:2605252  
A:Accession: A33555

A; Status: preliminary  
A; Molecule type: protein  
A; Residues: 29-41; 88-132-149; 339-354; 363-411 <MOO>  
R; Cohen, J. B.; Sharp, S. D.; Liu, W. S.  
J. Biol. Chem. 266, 23354-23364, 1991  
Title: Structure of the agonist-binding site of the nicotinic acetylcholine receptor.  
Reference number: A41587; MUID: 92078212; PMID: 1744130  
Accession: A41587

A: Molecule type: Protein  
A: Residues: 104-131 <COH>  
A: Note: residue 117-Tyr was shown to be alkylated by [3H]-acetylcholine mustard, an analog of acetylcholine.  
R: Blanton, M.P.; Cohen, J.B.  
Biochemistry 33; 2859-2872, 1994  
A: Title: Identifying the lipid-protein interface of the Torpedo nicotinic acetylcholine receptor.  
A: Reference number: A54233; MUID:941176477; PMID:8130199  
A: Accession: A54233

A:Accession: AJ47233  
A:Status: preliminary  
A:Molecule type: protein  
A:Residues: 234-266;287-319;423-453 <BLA>  
C:Complex: heterotetramer of two alpha chains, one beta chain (see PIR:ACRYB1), one gamma chain (see PIR:ACRYB2)  
C:Superfamily: acetylcholine receptor  
C:Keywords: ion channel; membrane protein; neurotransmitter receptor; postsynaptic membrane  
F:1-24/Domain: signal sequence #status predicted <SIG>  
F:25-461/Product: nicotinic acetylcholine receptor alpha chain #status predicted <MAT>  
F:436-259/Domain: transmembrane status predicted <TM1>  
F:267-285/Domain: transmembrane status predicted <TM2>  
F:297-324/Domain: transmembrane status predicted <TM3>  
F:423-450/Domain: transmembrane status predicted <TM4>

Query Match	77.7%	Score 888;	DB 2;	Length 457;
Best Local Similarity	75.2%;	Pred. No. 6.3e-74;		
Matches 158;	Conservative	23;	Mismatches 29;	Indels 0;
Gaps 0;				

Qy	1	SEHETRLVAKLFKXDYSVSRVPREDHQVVEVTLAGLQILINDEVNQIVTTNRLKQOM	60
Db	21	TDHETRLIGDLFANYKNKVRPVETIKDQVVVTGLQLILINDEVNQIVSTNRLKQOM	80
Qy	61	VDYLNKWNPDYDGGVKIHIHPSEKIWRPDLVLYNNADGDFAIYKFKVLQYTGHTWTP	120
Db	81	RDVNLKWDPAKYGGVKKIRIPSDVSWPDLVLYNNADGDFAIKSKTILLETYGTWTP	140
Qy	121	PAIFKSYCEIIVTHFFPDEONCSMKLGTTWYDGSVVAINPESDQPLDSNFMESGEVKE	180
Db	141	PAIFKSYCEIIVTYFFPDQONCSMKGTWYDGSLLVINPERDRPDLDSNFMASGEWMKD	200
Qy	181	SRGWKHSVTYSCCPDTPYLDITYHFVMQRL	210
Db	201	YRCWKIHWVYTCPCDPKPYLDITYHFVLORI	230

RESULT 11  
S08162

C:Species: *Xenopus laevis* (African clawed frog)  
 C:Date: 31-Dec-1993 #sequence\_revision 31-Dec-1993 #text\_change 20-Aug-1999  
 C:Accession: S08162  
 R:Hartman, D.S.; Claudio, T.  
 Nature 343, 372-375, 1990  
 A:Title: Coexpression of two distinct muscle acetylcholine receptor alpha-subunits du  
 A:Reference number: S08162; PMID:90136925; PMID:2300185  
 A:Accession: S08162  
 A:Molecule type: mRNA



A;Residues: 1-457 <HAR>  
A;Cross-references: EMBL:X17244; NID:g64514; PIDN:CAA35109.1; PID:g64515  
C;Superfamily: acetylcholine receptor  
C;Keywords: glycoprotein; heteropentamer; ion channel; neurotransmitter receptor; postsynaptic membrane; signal sequence #status predicted <SIG>  
F;1-20/Domain: signal sequence #status predicted <SIG>  
F;21-457/Product: nicotinic acetylcholine receptor alpha-1a chain #status predicted <MAT>  
F;231-259/Domain: transmembrane #status predicted <TM1>  
F;263-281/Domain: transmembrane #status predicted <TM2>  
F;297-318/Domain: transmembrane #status predicted <TM3>  
F;429-447/Domain: transmembrane #status predicted <TM4>  
F;148-162,212-213/Disulfide bonds: #status predicted  
F;161/Binding site: carboxylate (Asn) (covalent) #status predicted

Query Match 76.6%; Score 875; DB 2; Length 457;  
Best Local Similarity 74.8%; Pred. No. 9.9e-73;  
Matches 157; Conservative 24; Mismatches 29; Indels 0; Gaps 0;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHROVETAGLQLIQLINVDVNOIVTNNVRLKQOW 60  
21 SEDESRLINDFKSYKYNKVRPFAFKDKVYVGLQLIQLINVDVNOIVTNNVRLKQOW 80  
QY 61 VDYNLKNPDDYGGVKKIHIPSEKIRPDLVLYNNADGFAIVKFTKVLQYTGHTWTP 120  
DB 81 EDVHLKWDPEYGGIKKVRIPSSDIWRPDIIVLYNNADGFAIVQETKVLDDYTGKIIWLP 140  
QY 121 PAIFKSCYEIVTHFPFDEQNCMKLGTWYDGSVAINPESDQDLSNFMESGEWIK 180  
DB 141 PAIFKSCYEMIVTFPPDLQNCMKLGTWYDGLVYNPDRPDLNFMESGEWYMKD 200  
QY 181 SRGKHSHVTSYSCCPDTPYLDITYHFVMQRL 210  
DB 201 YRCWKHWYVDCPETPYLDITYHFLLQRL 230

RESULT 12  
A24572  
nicotinic acetylcholine receptor alpha-3 chain precursor - rat  
C;Species: Rattus norvegicus (Norway rat)  
C;Date: 30-Jun-1988 #sequence\_revision 30-Jun-1988 #text\_change 08-Nov-1996  
C;Accession: A24572  
R;Boulter, J.; Evans, K.; Goldman, D.; Martin, G.; Treco, D.; Heinemann, S.; Patrick, J.  
Nature 319, 368-374, 1986  
A;Title: Isolation of a cDNA clone coding for a possible neuronal nicotinic acetylcholine  
A;Reference number: A24572; MUID:86118671; PMID:3753746  
A;Accession: A24572  
A;Molecule type: mRNA  
A;Residues: 1-499 <BOU>  
C;Superfamily: acetylcholine receptor  
C;Keywords: glycoprotein; ion channel; neurotransmitter receptor; postsynaptic membrane;  
F;1-25/Domain: signal sequence #status predicted <SIG>  
F;26-499/Product: nicotinic acetylcholine receptor alpha chain #status predicted <MAT>

Query Match 52.0%; Score 594.5; DB 2; Length 499;  
Best Local Similarity 51.4%; Pred. No. 7.7e-47;  
Matches 108; Conservative 39; Mismatches 62; Indels 1; Gaps 1;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHROVETAGLQLIQLINVDVNOIVTNNVRLKQOW 60  
DB 26 SEAEHRLFQVLFEDYNEIIRPVANVSHPVITQFVSMQSLVKVDEVNQIMETNLWLKQIW 85  
QY 61 VDYNLKNPDDYGGVKKIHIPSEKIRPDLVLYNNADGFAIVKFTKVLQYTGHTWTP 120  
DB 86 NDYKLKWKPSDYQGVFPMRPAEKIRPDIIVLYNNADGFAIVQETKVLDDYTGKIIWLP 145  
QY 121 PAIFKSCYEIVTHFPFDEQNCMKLGTWYDGSVAINPESDQDLSNFMESGEWIK 180  
DB 146 PAIFKSCYEMIVTFPPDLQNCMKLGTWYDGLVYNPDRPDLNFMESGEWYMKD 205  
QY 181 SRGKHSHVTSYSCCPDTPYLDITYHFVMQRL 210  
DB 206 APGYKHEIKYKNCCEI-YQDITYSLYIRRL 234

RESULT 13  
A53956

nicotinic acetylcholine receptor alpha-3 chain precursor, neuronal - human  
C;Species: Homo sapiens (man)  
C;Date: 07-Oct-1994 #sequence\_revision 07-Oct-1994 #text\_change 20-Aug-1999  
C;Accession: A53956; S21338  
R;Mihovilovic, M.; Roses, A.D.  
Exp. Neurol. 111, 175-180, 1991  
A;Title: Expression of mRNAs in human thymus coding for the alpha3 subunit of a neuro  
A;Reference number: A53956; MUID:91114756; PMID:1989896  
A;Accession: A53956  
A;Status: preliminary  
A;Molecule type: mRNA  
A;Residues: 1-503 <MIH>  
A;Cross-references: GB:M37981; NID:g189252; PIDN:AAA59942.1; PID:g189253  
submitted to the EMBL Data Library, June 1990  
A;Description: Nucleotide sequence of the mature human nicotinic acetylcholine receptor  
A;Reference number: S21338  
A;Accession: S21338  
A;Status: preliminary  
A;Molecule type: mRNA  
A;Residues: 30-503 <ANA>  
A;Cross-references: EMBL:X53559; NID:g34985; PIDN:CAA37625.1; PID:g34986  
C;Genetics:

A;Gene: GDB:CHRNA3  
A;Cross-references: GDB:125219; OMIM:118503  
A;Map position: 15q24-15q24  
C;Superfamily: acetylcholine receptor  
C;Keywords: neurotransmitter receptor

Query Match 52.0%; Score 594.5; DB 2; Length 503;  
Best Local Similarity 51.0%; Pred. No. 7.7e-47;  
Matches 107; Conservative 41; Mismatches 61; Indels 1; Gaps 1;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHROVETAGLQLIQLINVDVNOIVTNNVRLKQOW 60  
DB 30 SEAEHRLFQVLFEDYNEIIRPVANVSDPVIIHFVSMQSLVKVDEVNQIMETNLWLKQIW 89  
QY 61 VDYNLKNPDDYGGVKKIHIPSEKIRPDLVLYNNADGFAIVKFTKVLQYTGHTWTP 120  
DB 90 NDYKLKWKPSDYQGVFPMRPAEKIRPDIIVLYNNADGFAIVQETKVLDDYTGKIIWLP 149  
QY 121 PAIFKSCYEIVTHFPFDEQNCMKLGTWYDGSVAINPESDQDLSNFMESGEWIK 180  
DB 150 PAIFKSCYEMIVTFPPDLQNCMKLGTWYDGLVYNPDRPDLNFMESGEWYMKD 209  
QY 181 SRGKHSHVTSYSCCPDTPYLDITYHFVMQRL 210  
DB 210 APGYKHEIKYKNCCEI-YPDITYSLYIRRL 238

## RESULT 14

S60589  
acetylcholine receptor alpha chain precursor - bovine  
C;Species: Bos primigenius taurus (cattle)  
C;Date: 27-Apr-1996 #sequence\_revision 13-Mar-1997 #text\_change 20-Aug-1999  
C;Accession: S60589  
R;Criado, M.; Alamo, L.; Navarro, A.  
Neurochem. Res. 17, 281-287, 1992  
A;Title: Primary structure of an agonist binding subunit of the nicotinic acetylcholi  
A;Reference number: S60589; MUID:92319195; PMID:1620271  
A;Accession: S60589  
A;Status: preliminary  
A;Molecule type: mRNA  
A;Residues: 1-495 <CRI>  
A;Cross-references: EMBL:X57032; NID:g297762; PIDN:CAA40348.1; PID:g297763  
C;Superfamily: acetylcholine receptor  
C;Keywords: neurotransmitter receptor  
F;1-21/Domain: signal sequence #status predicted <SIG>  
F;22-495/Product: acetylcholine receptor alpha chain #status predicted <MAT>

Query Match 51.5%; Score 588.5; DB 2; Length 495;

Best Local Similarity 50.5%; Pred. No. 2.7e-46;  
Matches 106; Conservative 41; Mismatches 62; Indels 1; Gaps 1;

QY 1 SEHETRLVAKLFDKDYSSVRPVEDHRQVEVTAGLIQLINVDVNOIVTTNVLKKOOW 60  
| : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | :  
Db 22 SDAEHLRFLERFEDYNELIRPVANSDPIIHFVSMSQLVKVDVAQMETSNLWLKQIW 81

QY 61 VDYLKNWPNDDYGCVKHHPSEKIWRPDLYLNADGDFAIKFVTKVLLQYTGHITWP 120  
| | | | | | | | : | | : | | : | | : | | : | | : | | : | | :  
Db 82 NDYKLKNWPSDYGAEFMRPFAEKIKRPDIIVLYNNAVGVDFQVDDKTALLKYTGEVTWP 141

QY 121 PAIFKSCEIIITHFPDEQNCSMKLTWTYDGSWAINPESDPDLISNFMESEGWIKE 180  
| | | | | | | | : | | : | | : | | : | | : | | : | | : | | :  
Db 142 PAIFKSSCKIDTVTFPEDYQNTMFKGSWSYDKAKIDLVLIGSSMNLDKYWESGEWAIIK 201

QY 181 SRGWHKVSVTSCCPDTPYLDITYHFVMORL 210  
| : | | : | | : | | : | | | | : | | : | | : | | : | | : | | :  
Db 202 APGYKHDIKNCCBEI-YPDITYSLYIRRL 230

SULT 15  
7040  
nicotinic acetylcholine receptor alpha-3 chain precursor, neuronal (version 2) - human  
C;Species: Homo sapiens (man)  
C;Date: 17-Jul-1992 #sequence\_revision 17-Jul-1992 #text\_change 21-Jul-2000  
C;Accession: A37040; S24595  
R;Forasari, D.; Chini, B.; Tarroni, P.; Clementi, F.  
Neurosci. Lett. 111, 351-356, 1990  
A;Title: Molecular cloning of human neuronal nicotinic receptor alpha-3-subunit.  
A;Reference number: A37040; MID:90245296; PMID:2336208  
A;Accession: A37040  
A:Molecule type: mRNA  
A;Residues: 1-502 <FOR>  
A;Cross-references: EMBL:X52239; NID:g177897; PID:AAC84176.1; PID:g177898  
C;Superfamily: acetylcholine receptor  
C;Keywords: neurotransmitter receptor; transmembrane protein  
F;1-28/domain: signal sequence #status predicted <SIG>  
F;29-502/product: nicotinic acetylcholine receptor alpha-3 chain #status predicted <MAT>

Query Match 51.5%; Score 588.5; DB 2; Length 502;  
Best Local Similarity 50.5%; Pred. No. 2.8e-46;  
Matches 106; Conservative 40; Mismatches 63; Indels 1; Gaps 1;

QY 1 SEHETRLVAKLFDKDYSSVRPVEDHRQVEVTAGLIQLINVDVNOIVTTNVLKKOOW 60  
| | | | | | | | : | | : | | : | | : | | : | | : | | : | | :  
Db 29 SEAHRLRFLERFEDYNELIRPVANSDPIIHFEVSMQSOLVKVDVAQMETSNLWLKQIW 88

QY 61 VDYLKNWPNDDYGCVKHHPSEKIWRPDLYLNADGDFAIKFVTKVLLQYTGHITWP 120  
| | | | | | | | : | | : | | : | | : | | : | | : | | : | | :  
Db 89 NDYKLKNWPSDYGAEFMRPFAEQIAKPDIIVLYNNAVGVDFQVTTKTALLKYTGEVTWP 148

QY 121 PAIFKSCEIIITHFPDEQNCSMKLTWTYDGSWAINPESDPDLISNFMESEGWIKE 180  
| | | | | | | | : | | : | | : | | : | | : | | : | | : | | :  
Db 149 PAIFKSSCKIDTVTFPEDYQNTMFKGSWSYDKAKIDLVLIGSSMNLDKYWESGEWAIIK 208

QY 181 SRGWHKVSVTSCCPDTPYLDITYHFVMORL 210  
| : | | : | | : | | : | | | | : | | : | | : | | : | | : | | :  
Db 209 APGYKHDIKNCCBEI-YPDITYSLYSRRLL 237

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OM protein - protein search, using sw model

Run on: January 14, 2003, 16:48:33 ; Search time 78 Seconds  
(without alignments)  
111.667 Million cell updates/sec

Title: US-09-820-339A-2

Perfect score: 1143

Sequence: 1 SEHERLVALEKFDYSSVVR.....SCPDTPYLDITYHFVQRL 210

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 112892 seqs, 41476328 residues

Total number of hits satisfying chosen parameters: 112892

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : SwissProt\_40.\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	1116.5	97.7	482	1 ACHA_HUMAN	P02708 homo sapien
2	1096	95.9	457	1 ACHA_BOVIN	P02709 bos taurus
3	1096	95.9	457	1 ACHA_MOUSE	P04756 mus musculus
4	1095	95.8	457	1 ACHA_RAT	P25108 rattus norv
5	983	86.0	456	1 ACHA_CHICK	P09479 gallus gall
6	915	80.1	461	1 ACHA_TORMA	P02711 torpedo mar
7	910	79.6	451	1 ACHA_TORCA	P02710 torpedo cal
8	888	77.7	457	1 ACHA_XENLA	P05377 xenopus lae
9	882	77.2	456	1 ACHA_BRARE	Q98880 brachydanio
10	875	76.6	457	1 ACHI_XENLA	P22456 xenopus lae
11	594.5	52.0	499	1 ACH3_RAT	P04757 rattus norv
12	594.5	52.0	503	1 ACH3_HUMAN	P32297 homo sapien
13	588.5	51.5	495	1 ACH3_BOVIN	Q07263 bos taurus
14	583.5	51.0	496	1 ACH3_CHICK	P09481 gallus gall
15	580.5	50.8	630	1 ACHA_RAT	P09483 rattus norv
16	577.5	50.5	627	1 ACHA_HUMAN	P43681 homo sapien
17	576	50.4	468	1 ACH2_HUMAN	P30532 homo sapien
18	575.5	50.3	529	1 ACH2_HUMAN	Q15822 homo sapien
19	571.5	50.0	512	1 ACH3_CARAU	P18845 carassius a
20	571.5	50.0	622	1 ACHA_CHICK	P09482 gallus gall
21	569.5	49.8	494	1 ACH6_HUMAN	Q15825 homo sapien
22	564.5	49.4	511	1 ACH2_RAT	P12389 rattus norv
23	564	49.3	452	1 ACH5_RAT	P20420 rattus norv
24	562.5	49.2	528	1 ACH2_CHICK	P09480 gallus gall
25	560.5	49.0	494	1 ACH6_CHICK	P49581 gallus gall
26	553.5	48.4	462	1 ACHO_CARAU	P13908 carassius a
27	553.5	48.4	493	1 ACH6_RAT	P43443 rattus norv
28	552	48.3	567	1 ACHI_DROME	P09478 drosophila
29	537	47.0	454	1 ACH5_CHICK	P26152 gallus gall
30	536.5	46.9	458	1 ACHO_HUMAN	Q05901 homo sapien
31	532.5	46.6	455	1 ACHO_CHICK	P43679 gallus gall
32	532.5	46.6	464	1 ACHO_RAT	P12391 rattus norv
33	532	46.5	516	1 ACHI_MANSE	P91766 manduca sex

34	522.5	45.7	576	1 ACH2_DROME	P17644 drosophila
35	520.5	45.5	466	1 ACHP_CARAU	P18257 carassius a
36	508	44.4	557	1 ACHI_SCHGR	P23414 schistocerc
37	503	44.0	519	1 ACH4_DROME	P25162 drosophila
38	501	43.8	127	1 ACHA_NATTE	P14144 natix tess
39	479	41.9	491	1 ACHN_CHICK	P09484 gallus gall
40	479	41.9	500	1 ACHN_RAT	P12390 rattus norv
41	476.5	41.7	521	1 ACH3_DROME	P04755 drosophila
42	472.5	41.3	479	1 ACH9_HUMAN	Q9uqm1 homo sapien
43	472	41.3	502	1 ACHN_HUMAN	P17787 homo sapien
44	469.5	41.1	479	1 ACH9_RAT	P43144 rattus norv
45	469	41.0	470	1 ACHP_CHICK	P26153 gallus gall

ALIGNMENTS

RESULT 1				
ACHA_HUMAN	ACHA_HUMAN	STANDARD;	PRT;	482 AA.
AC	P02708;			
DT	21-JUL-1986 (Rel. 01, Created)			
DT	01-AUG-1990 (Rel. 15, Last sequence update)			
DT	15-JUN-2002 (Rel. 41, Last annotation update)			
DE	Acetylcholine receptor protein, alpha chain precursor.			
GN	CHRNA1 OR CHNRA OR ACHRA.			
OS	Homo sapiens (Human).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.			
OX	NCBI_TaxID=9606;			
RN	[1]			
RP	SEQUENCE FROM N.A. (ISOFORM 1).			
RX	MEDLINE=84039794; PubMed=6688857;			
RA	Noda M., Furutani Y., Takahashi H., Toyosato M., Tanabe T.,			
RA	Shimizu S., Kikuyotani S., Kayano T., Hirose T., Inayama S., Numa S.;			
RT	"Cloning and sequence analysis of calf cDNA and human genomic DNA			
RT	encoding alpha-subunit precursor of muscle acetylcholine receptor."			
RL	Nature 305:818-823(1983).			
RN	[2]			
RP	SEQUENCE FROM N.A. (ISOFORM 1).			
RX	MEDLINE=88112190; PubMed=3338555;			
RA	Schoepfer R., Luther M., Lindstrom J.M.;			
RT	"The human medulloblastoma cell line TE671 expresses a muscle-like			
RT	acetylcholine receptor. Cloning of the alpha-subunit cDNA."			
RL	FEBS Lett. 226:235-240(1988).			
RN	[3]			
RP	SEQUENCE OF 21-482 (ISOFORM 1).			
RX	MEDLINE=88139764; PubMed=2449458;			
RA	Hohlfield R., Toyka K.V., Miner L.L., Walgrave S.L.,			
RA	Conti-Tronconi B.M.;			
RT	"Amphipathic segment of the nicotinic receptor alpha subunit contains			
RT	epitopes recognized by T lymphocytes in myasthenia gravis."			
RL	J. Clin. Invest. 81:657-660(1988).			
RN	[4]			
RP	SEQUENCE FROM N.A. (ISOFORM 2).			
RC	TISSUE=Muscle;			
RX	MEDLINE=90291973; PubMed=1694127;			
RA	Beeson D., Morris A., Vincent A., Newsom-Davis J.;			
RT	"The human muscle nicotinic acetylcholine receptor alpha-subunit			
RT	exists as two isoforms: a novel exon."			
RL	EMBO J. 9:2101-2106(1990).			
RN	[5]			
RP	SEQUENCE FROM N.A. (ISOFORM 1).			
RX	TISSUE=Thymus;			
RA	MEDLINE=95242389; PubMed=7725386;			
RA	Gattenloehner S., Brabletz T., Schultz A., Marx A.,			
RA	Mueller-Hermelink H.-K., Kirchner T.;			
RT	"Cloning of a cDNA coding for the acetylcholine receptor			
RT	alpha-subunit from a thymoma associated with myasthenia gravis."			
RL	Thymus 23:103-113(1994).			
RN	[6]			
RP	SEQUENCE OF 78-113 FROM N.A. (ISOFORM 2).			
RX	MEDLINE=93181196; PubMed=8441631;			

RA Talib S., Okarma T.B., Lebkowski J.S.;  
 RT Differential expression of human nicotinic acetylcholine receptor  
 RL alpha subunit variants in muscle and non-muscle tissues.";  
 RN Nucleic Acids Res. 21:233-237(1993).  
 RP [7]  
 RP VARIANT SCMS SER-198.  
 RX MEDLINE=9534477; PubMed=7619526;  
 RA Sine S.M., Ohno K., Bouzat C., Auerbach A., Milone M., Pruitt J.N. II,  
 RA Engel A.G.;  
 RA "Mutation of the acetylcholine receptor alpha subunit causes a slow-  
 RT channel myasthenic syndrome by enhancing agonist binding affinity.";  
 RL Neuron 15:229-239(1995).  
 RN [8]  
 RN VARIANT SCMS LYS-262.  
 RX MEDLINE=97026281; PubMed=8872460;  
 RA Engel A.G., Ohno K., Milone M., Wang H.-L., Nakano S., Bouzat C.,  
 RA Pruitt J.N. II, Hutchinson D.O., Brengman J.M., Bren N., Sieb J.P.,  
 RA Sine S.M.;  
 RA "New mutations in acetylcholine receptor subunit genes reveal  
 RT heterogeneity in the slow-channel congenital myasthenic syndrome.";  
 RL Hum. Mol. Genet. 5:1217-1227(1996).  
 RN [9]  
 RX VARIANTS SCMS SER-198; MET-201; ILE-299 AND ILE-314.  
 RA MEDLINE=97301773; PubMed=9158151;  
 RA Croxen R., Newland C., Beeson D., Oosterhuis H., Chauplannaz G.,  
 RA Vincent A., Newsom-Davis J.;  
 RT "Mutations in different functional domains of the human muscle  
 RL acetylcholine receptor alpha subunit in patients with the  
 RT slow-channel congenital myasthenic syndrome.";  
 RL Hum. Mol. Genet. 6:767-774(1997).  
 CC -!- FUNCTION: AFTER BINDING ACETYLCHOLINE, THE ACHR RESPONDS BY AN  
 CC EXTENSIVE CHANGE IN CONFORMATION THAT AFFECTS ALL SUBUNITS AND  
 CC LEADS TO OPENING OF AN ION-CONDUCTING CHANNEL ACROSS THE PLASMA  
 CC MEMBRANE.  
 CC -!- SUBUNIT: PENTAMER OF TWO ALPHA CHAINS, AND ONE EACH OF THE BETA,  
 CC DELTA, AND GAMMA (IN IMMATURE MUSCLE) OR EPSILON (IN MATURE  
 CC MUSCLE) CHAINS.  
 CC -!- SUBCELLULAR LOCATION: Integral membrane protein.  
 CC -!- ALTERNATIVE PRODUCTS: 2 ISOFORMS; 1 AND 2 (SHOWN HERE); ARE  
 CC PRODUCED BY ALTERNATIVE SPLICING.  
 CC -!- TISSUE SPECIFICITY: ISOFORM 1 IS DIFFERENTIALLY EXPRESSED ONLY IN  
 CC THE SKELETAL MUSCLE, WHEREAS ISOFORM 2 IS CONSTITUTIVELY EXPRESSED  
 CC IN SKELETAL MUSCLE, BRAIN, HEART, KIDNEY, LIVER LUNG AND THYMUS.  
 CC -!- DISEASE: THE ALPHA SUBUNIT IS THE MAIN FOCUS FOR ANTIBODY BINDING  
 CC IN MYASTHENIA GRAVIS. MYASTHENIA GRAVIS IS CHARACTERIZED BY  
 CC SPORADIC MUSCULAR FATIGABILITY AND WEAKNESS, OCCURRING CHIEFLY IN  
 CC MUSCLES INNERVATED BY CRANIAL NERVES, AND CHARACTERISTICALLY  
 CC IMPROVED BY CHOLINESTERASE-INHIBITING DRUGS.  
 CC -!- DISEASE: DEFECTS IN CHRNA1 ARE ONE OF THE CAUSES OF THE SLOW-  
 CC CHANNEL CONGENITAL MYASTHENIC SYNDROME (SCMS).  
 CC -!- SIMILARITY: BELONGS TO THE LIGAND-GATED IONIC CHANNEL FAMILY.  
 -----  
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 -----  
 DR EMBL; Y00762; CAA68731.1; -;  
 DR EMBL; X17104; CAA34960.1; -;  
 DR EMBL; X02502; CAA26344.1; -;  
 DR EMBL; X02503; CAA26344.1; JOINED.  
 DR EMBL; X02504; CAA26344.1; JOINED.  
 DR EMBL; X02505; CAA26344.1; JOINED.  
 DR EMBL; X02506; CAA26344.1; JOINED.  
 DR EMBL; X02507; CAA26344.1; JOINED.  
 DR EMBL; X02508; CAA26344.1; JOINED.  
 DR EMBL; S77094; AAD14247.1; -;  
 DR EMBL; X70108; CAA49705.1; ALT\_SEQ.  
 DR PIR; A03168; ACHUA1.  
 DR PIR; S10148; S10148.

DR Genew; HGNC:1955; CHRNA1.  
 DR MIN; 100690; -;  
 DR MIN; 254210; -;  
 DR MIN; 601462; -;  
 DR InterPro; IPR000188; GABAA\_receptor.  
 DR InterPro; IPR001175; Neur\_channel.  
 DR Pfam; PF02931; Neur\_chan\_LBD; 1.  
 DR Pfam; PF02932; Neur\_chan\_memb; 1.  
 DR PRINTS; PR00252; NRIONCHANNEL.  
 DR TIGRFAMS; TIGR00860; LIC; 1.  
 DR PROSITE; PS00236; NEUROTR\_ION\_CHANNEL; 1.  
 KW Receptor; Postsynaptic membrane; Ionic channel; Glycoprotein; Signal;  
 KW Alternative splicing; Transmembrane; Disease mutation.  
 FT SIGNAL 1 20  
 FT CHAIN 21 482  
 FT DOMAIN 21 255  
 FT TRANSMEM 256 280  
 FT TRANSMEM 288 306  
 FT TRANSMEM 322 341  
 FT DOMAIN 342 453  
 FT TRANSMEM 454 472  
 FT DISULFID 173 187  
 FT DISULFID 237 238  
 FT CARBOHYD 186 186  
 FT VARSPLIC 79 103  
 FT VARIANT 198 198  
 FT VARIANT 201 201  
 FT VARIANT 262 262  
 FT VARIANT 299 299  
 FT VARIANT 314 314  
 FT CONFLICT 415 415  
 FT SEQUENCE 482 AA; 54545 MW; 8B307AD69B91A28B CRC64;  
 SO  
 Query Match 97.7%; Score 1116.5; DB 1; Length 482;  
 Best Local Similarity 88.9%; Pred. No. 3.5e-94;  
 Matches 209; Conservative 0; Mismatches 1; Indels 25; Gaps 1;  
 Qy 1 SEHETRLVAKLFKDYSSVVRPVEDHRQVVEVTAGLQLQLINVDVNOIVTNNVLKQ-- 58  
 Db 21 SEHETRLVAKLFKDYSSVVRPVEDHRQVVEVTAGLQLQLINVDVNOIVTNNVLKQGD 80  
 Qy 59 -----QWVDYNLKNPDDYGVKKIHIPSEKIWRPDLVLYNN 95  
 Db 81 MVDLPSPSCVTGLGVPLFSLHQLNEQWVDYNLKNPDDYGVKKIHIPSEKIWRPDLVLYNN 140  
 Qy 96 ADGDFAIYKFTKVLQYTGHTTTPPAIFKSYCEIIVTHFFDEQNCMSKLGTTWYDGSV 155  
 Db 141 ADGDFAIYKFTKVLQYTGHTTTPPAIFKSYCEIIVTHFFDEQNCMSKLGTTWYDGSV 200  
 Qy 156 VAINPESQDPLSNFMESGEWIKESRGWKHSVTVSCCPDTPYLDITVHFVQRL 210  
 Db 201 VAINPESQDPLSNFMESGEWIKESRGWKHSVTVSCCPDTPYLDITVHFVQRL 255  
 RESULT 2  
 ACHA\_BOVIN STANDARD; PRT; 457 AA.  
 AC PO2709;  
 DT 21-JUL-1986 (Rel. 01, Created)  
 DT 21-JUL-1986 (Rel. 01, Last sequence update)  
 DT 15-JUN-2002 (Rel. 41, Last annotation update)  
 DE Acetylcholine receptor protein, alpha chain precursor.  
 GN CHRNA1.  
 OS Bos taurus (Bovine).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;  
 OC Bovidae; Bovinae; Bos.



FT DISULFID 212 213 ASSOCIATED WITH RECEPTOR ACTIVATION.  
 FT CARBOHYD 161 161 N-LINKED (GLCNAC. . .) (PROBABLE).  
 FT CONFLICT 13 13 C -> S (IN REF. 2 AND 3).  
 SQ SEQUENCE 457 AA; 51938 MW; 5CB606D144F29436 CRC64;

Query Match 95.9%; Score 1096; DB 1; Length 457;  
 Best Local Similarity 94.8%; Pred. No. 2.4e-92;  
 Matches 199; Conservative 6; Mismatches 5; Indels 0; Gaps 0;

QY 1 SEHETRLVAKLFKDYSSVVRPVEDHRQVVEVTAGLQIQLINVDVQVITVTVNRVKQOW 60  
 DB 21 SEHETRLVAKLFKDYSSVVRPVEDHRQVVEVTAGLQIQLINVDVQVITVTVNRVKQOW 80  
 QY 61 VDYNLKWNPDYGGVKKIHIPSEKIWRPDLVLYNNADGFAIVKFKVLLQYTGHTWTP 120  
 DB 81 VDYNLKWNPDYGGVKKIHIPSEKIWRPDLVLYNNADGFAIVKFKVLLQYTGHTWTP 140  
 QY 121 PAIFKSYCEIIVTHFPDQNCMKLGTWYDGSVVAIINPESDQDPLSNFMSGGEWVKE 180  
 DB 141 PAIFKSYCEIIVTHFPDQNCMKLGTWYDGSVVAIINPESDQDPLSNFMSGGEWVKE 200  
 DB 181 SRGWKHSVTYSCPTPYLDITYHFVQMRL 210  
 DB 201 ARGWKHWVYSCPTPYLDITYHFVQMRL 230

RESULT 4  
 ACHA\_RAT  
 ID ACHA\_RAT STANDARD; PRT; 457 AA.  
 AC P25108;  
 DT 01-MAY-1992 (Rel. 22, Created)  
 DT 01-MAY-1992 (Rel. 22, Last sequence update)  
 DT 15-JUN-2002 (Rel. 41, Last annotation update)  
 DE Acetylcholine receptor protein, alpha chain precursor.  
 GN CHRNA1 OR ACRA.  
 OS Rattus norvegicus (Rat).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Rattus.  
 OX NCBI\_TaxID=10116;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=Muscle;  
 RX MEDLINE=91099317; PubMed=1702709;  
 RA Wittemann V., Stein E., Barg B., Konno T., Koenen M., Kues W.,  
 RA "Primado M., Hofmann M., Sakmann B.;  
 RT "Primary structure and functional expression of the alpha-, beta-,  
 RT gamma-, delta- and epsilon-subunits of the acetylcholine receptor  
 RT from rat muscle".  
 CC Eur. J. Biochem. 194:437-448(1990).  
 CC -!- FUNCTION: AFTER BINDING ACETYLCHOLINE, THE ACHR RESPONDS BY AN  
 CC EXTENSIVE CHANGE IN CONFORMATION THAT AFFECTS ALL SUBUNITS AND  
 CC LEADS TO OPENING OF AN ION-CONDUCTING CHANNEL ACROSS THE PLASMA  
 CC MEMBRANE.  
 CC -!- SUBUNIT: PENTAMER OF TWO ALPHA CHAINS, AND ONE EACH OF THE BETA,  
 CC DELTA, AND GAMMA (IN IMMATURE MUSCLE) OR EPSILON (IN MATURE  
 CC MUSCLE) CHAINS.  
 CC -!- SUBCELLULAR LOCATION: Integral membrane protein.  
 CC -!- SIMILARITY: BELONGS TO THE LIGAND-GATED IONIC CHANNEL FAMILY.  
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 CC -----  
 CC EMBL; X74832; CAA52826.1; .  
 DR PIR; S13872; S13872.  
 DR InterPro; IPR000188; GABAA\_receptor.  
 DR InterPro; IPR001175; Neur\_chan.  
 DR Pfam; PF02931; Neur\_chan\_LBD; 1.  
 DR Pfam; PF02932; Neur\_chan\_memb; 1.

DR PRINTS; PR00252; NRIONCHANNEL.  
 DR TIGRFAMS; TIGR00860; LIC; 1.  
 DR PROSITE; PS00236; NEUROTR\_ION\_CHANNEL; 1.  
 KW Receptor; Postsynaptic membrane; Ionic channel; Glycoprotein; Signal;  
 KW Transmembrane.  
 FT SIGNAL 1 20 BY SIMILARITY.  
 FT CHAIN 21 457 ACETYLCHOLINE RECEPTOR PROTEIN, ALPHA  
 FT CHAIN. CHAIN.  
 FT DOMAIN 21 230 EXTRACELLULAR (POTENTIAL).  
 FT TRANSMEM 231 255 POTENTIAL.  
 FT TRANSMEM 263 281 POTENTIAL.  
 FT TRANSMEM 297 316 POTENTIAL.  
 FT DOMAIN 317 428 CYTOPLASMIC (POTENTIAL).  
 FT TRANSMEM 429 447 POTENTIAL.  
 FT DISULFID 148 162 BY SIMILARITY.  
 FT DISULFID 212 213 ASSOCIATED WITH RECEPTOR ACTIVATION  
 FT CARBOHYD 161 161 (BY SIMILARITY).  
 FT SEQUENCE 457 AA; 51866 MW; 776AE3B8DF68F3 CRC64;  
 Query Match 95.8%; Score 1095; DB 1; Length 457;  
 Best Local Similarity 94.8%; Pred. No. 3e-92;  
 Matches 199; Conservative 6; Mismatches 5; Indels 0; Gaps 0;

QY 1 SEHETRLVAKLFKDYSSVVRPVEDHRQVVEVTAGLQIQLINVDVQVITVTVNRVKQOW 60  
 DB 21 SEHETRLVAKLFKDYSSVVRPVEDHRQVVEVTAGLQIQLINVDVQVITVTVNRVKQOW 80  
 QY 61 VDYNLKWNPDYGGVKKIHIPSEKIWRPDLVLYNNADGFAIVKFKVLLQYTGHTWTP 120  
 DB 81 VDYNLKWNPDYGGVKKIHIPSEKIWRPDLVLYNNADGFAIVKFKVLLQYTGHTWTP 140  
 QY 121 PAIFKSYCEIIVTHFPDQNCMKLGTWYDGSVVAIINPESDQDPLSNFMSGGEWVKE 180  
 DB 141 PAIFKSYCEIIVTHFPDQNCMKLGTWYDGSVVAIINPESDQDPLSNFMSGGEWVKE 200  
 QY 181 SRGWKHSVTYSCPTPYLDITYHFVQMRL 210  
 DB 201 ARGWKHWVYSCPTPYLDITYHFVQMRL 230

RESULT 5  
 ACHA\_CHICK  
 ID ACHA\_CHICK STANDARD; PRT; 456 AA.  
 AC P09479;  
 DT 01-MAR-1989 (Rel. 10, Created)  
 DT 01-MAR-1989 (Rel. 10, Last sequence update)  
 DT 15-JUN-2002 (Rel. 41, Last annotation update)  
 DE Acetylcholine receptor protein, alpha chain precursor.  
 OS Gallus gallus (Chicken).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Archosauria; Aves; Neognathae; Galliformes; Phasianinae;  
 OC Gallus.  
 OX NCBI\_TaxID=9031;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=Brain;  
 RX MEDLINE=88283624; PubMed=3267226;  
 RA Nef P., Oneyser C., Alliod C., Couturier S., Ballivet M.;  
 RT "Genes expressed in the brain define three distinct neuronal  
 RT nicotinic acetylcholine receptors.";  
 RL EMBO J. 7:595-601(1988).  
 RN [2]  
 RP SEQUENCE OF 1-12 FROM N.A.  
 RX MEDLINE=8714271; PubMed=3821734;  
 RA Klarsfeld A., Daubas P., Bourachot B., Changeux J.-P.;  
 RT "A 5'-flanking region of the chicken acetylcholine receptor alpha-  
 RT subunit gene confers tissue specificity and developmental control of  
 RT expression in transfected cells.";  
 RL Mol. Cell. Biol. 7:951-955(1987).  
 RN [3]  
 RP SEQUENCE OF 180-227 AND 260-333 FROM N.A.  
 RX MEDLINE=84206570; PubMed=6327170;



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CC EMBL; J00963; ; NOT\_ANNOTATED\_CDS.  
 CC MEDLINE; 86250692; PubMed-3722144;  
 DR EMBL; M25893; AAA96704.1; -;  
 DR EMBL; M14807; AAA49273.1; -;  
 DR PIR; A93440; A93440.  
 DR InterPro; IPR000188; GABAA\_receptor.  
 DR InterPro; IPR001175; Neur\_channel.  
 DR Pfam; PF02931; Neur\_chan\_LBD; 1.  
 DR Pfam; PF02932; Neur\_chan\_memb; 1.  
 DR PRINTS; PR00252; NRIONCHANNEL.  
 DR TIGRFAMS; TIGR00860; LIC; 1.  
 DR PROSITE; PS00236; NEUROTR\_ION\_CHANNEL; 1.  
 KW Receptor; Postsynaptic membrane; Ionic channel; Glycoprotein; Signal;  
 KW Transmembrane.  
 FT SIGNAL 1 24  
 FT CHAIN 25 461  
 FT DOMAIN 25 234 ACETYLCHOLINE RECEPTOR PROTEIN, ALPHA  
 FT TRANSMEM 235 259 CHAIN.  
 FT TRANSMEM 267 285 EXTRACELLULAR.  
 FT TRANSMEM 301 320  
 FT DOMAIN 321 432 CYTOPLASMIC.  
 FT TRANSMEM 433 451  
 FT DISULFID 152 166  
 FT DISULFID 216 217  
 FT CARBOHYD 165 165  
 FT CONFLICT 347 347  
 FT CONFLICT 448 448  
 FT CONFLICT 448 448  
 SQ SEQUENCE 461 AA; 52794 MW; 5354B3F8451D4F8C CRC64;

Query Match 80.1%; Score 915; DB 1; Length 461;  
 Best Local Similarity 75.7%; Pred. No. 7.3e-76;  
 Matches 159; Conservative 25; Mismatches 26; Indels 0; Gaps 0;

QY 1 SEHETRLVAKLFKDYSSVVRVEDHRQVVEVTAGLQILINVDVNVQIVTNRVLRQOQ 60  
 Db SEHETRLVALLLENKVIKRPVEHHTFVDITVGLQILINVDVNVQIVTNRVLRQOQ 84  
 QY 61 VYNLKNWPDGKVKIHPSEKTRWPDVLYNNADGDFAIKTKVLLQYTGHTWTP 120  
 Db IDVRLRNWPNADYGGIKRLPSDDVWLVDVLYNNADGDFAIKTKVLLQYTGHTWTP 144  
 QY 121 PAIFKSYCEIITHTPFDRQNSMKLTGWTYDGSVVAIPNSDQDPLSNFMSGSEWVKE 180  
 Db PAIFKSYCEIITHTPFDRQNSMKLTGWTYDGSVVAIPNSDQDPLSNFMSGSEWVKE 180  
 QY 145 PAIFKSYCEIITHTPFDRQNSMKLTGWTYDGSVVAIPNSDQDPLSNFMSGSEWVKE 204  
 Db PAIFKSYCEIITHTPFDRQNSMKLTGWTYDGSVVAIPNSDQDPLSNFMSGSEWVKE 204  
 QY 181 SRGWKHSVTSYCCPDTPYLDITYHFVQRL 210  
 Db YRGWKHWVYTCPPDTPYLDITYHFVQRI 234

RESULT 7  
 ACHA\_TORCA STANDARD; PRT; 461 AA.  
 ID ACHA\_TORCA  
 AC P02710;  
 DT 21-JUL-1986 (Rel. 01, Created)  
 DT 21-JUL-1986 (Rel. 01, Last sequence update)  
 DT 15-JUN-2002 (Rel. 41, Last annotation update)  
 DE Acetylcholine receptor protein, alpha chain precursor.  
 OS Torpedo californica (Pacific electric ray).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Chondrichthyes;  
 OC Elasmobranchii; Squala; Hypnosqualea; Pristiogadidae; Batoidea;  
 OC Torpediniformes; Torpedinoidei; Torpedinidae; Torpedo.  
 OX NCBI\_TaxID=7787;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE=83036943; PubMed=6182472;  
 RX Noda M., Takahashi H., Tanabe T., Toyosato M., Furutani Y.,  
 RA Hirose T., Asai M., Inayama S., Miyata T., Numa S.,  
 RT "Primary structure of alpha-subunit precursor of torpedo californica  
 acetylcholine receptor deduced from cDNA sequence.";  
 RL Nature 299:793-797(1982).

[2]  
 RN DISULFIDE BONDS.  
 RP MEDLINE=86250692; PubMed-3722144;  
 RA Kao P.N., Karlin A.;  
 RT "Acetylcholine receptor binding site contains a disulfide cross-link  
 between adjacent half-cystinyl residues.";  
 RL J. Biol. Chem. 261:8085-8088(1986).  
 RN [3]  
 RP STRUCTURE BY NMR OF 209-220.  
 RX MEDLINE=94059936; PubMed-8241115;  
 RA Basus V.J., Song G., Hawrot E.;  
 RT "NMR solution structure of an alpha-bungarotoxin/nicotinic receptor  
 peptide complex.";  
 RL Biochemistry 32:12290-12298(1993).  
 RN [4]  
 RP STRUCTURE BY NMR OF 91-100.  
 RX MEDLINE=97215763; PubMed-9062066;  
 RA Orlewski P., Marräud M., Cung M.T., Tsikaris V.,  
 RT Sakarellos-Daifotis M., Sakarellos C., Vatzaki E., Tzartos S.J.;  
 RT "Compared structures of the free nicotinic acetylcholine receptor  
 main immunogenic region (MIR) decapeptide and the antibody-bound  
 [A76]MIR analogue: a molecular dynamics simulation from  
 two-dimensional NMR data.";  
 RL Biopolymers 40:419-432(1996).  
 CC -1- FUNCTION: AFTER BINDING ACETYLCHOLINE, THE ACHR RESPONDS BY AN  
 EXTENSIVE CHANGE IN CONFORMATION THAT AFFECTS ALL SUBUNITS AND  
 LEADS TO OPENING OF AN ION-CONDUCTING CHANNEL ACROSS THE PLASMA  
 MEMBRANE.  
 CC -1- SUBUNIT: PENTAMER OF TWO ALPHA CHAINS, AND ONE EACH OF THE BETA,  
 DELTA, AND GAMMA CHAINS.  
 CC -1- SUBCELLULAR LOCATION: Integral membrane protein.  
 CC -1- SIMILARITY: BELONGS TO THE LIGAND-GATED IONIC CHANNEL FAMILY.  
 CC  
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EMBL; J00963; AAA96705.1; -;  
 PIR; A03170; ACRYAL  
 DR PDB; 1ABT; 31-JAN-94.  
 DR PDB; 1TOR; 08-MAR-96.  
 DR PDB; 1TOS; 08-MAR-96.  
 DR GlycoSuiteDB; P02710;  
 DR InterPro; IPR00188; GABAA\_receptor.  
 DR InterPro; IPR001175; Neur\_channel.  
 DR Pfam; PF02931; Neur\_chan\_LBD; 1.  
 DR Pfam; PF02932; Neur\_chan\_memb; 1.  
 DR PRINTS; PR00252; NRIONCHANNEL.  
 DR TIGRFAMS; TIGR00860; LIC; 1.  
 DR PROSITE; PS00236; NEUROTR\_ION\_CHANNEL; 1.  
 KW Receptor; Postsynaptic membrane; Ionic channel; Glycoprotein; Signal;  
 KW Transmembrane; 3D-structure.  
 FT SIGNAL 1 24  
 FT CHAIN 25 461 ACETYLCHOLINE RECEPTOR PROTEIN, ALPHA  
 FT DOMAIN 25 234 CHAIN.  
 FT TRANSMEM 235 259 EXTRACELLULAR.  
 FT TRANSMEM 267 285  
 FT TRANSMEM 301 320  
 FT DOMAIN 321 432 CYTOPLASMIC.  
 FT TRANSMEM 433 451  
 FT DISULFID 152 166  
 FT DISULFID 216 217  
 FT CARBOHYD 165 165  
 SQ SEQUENCE 461 AA; 52740 MW; 398C86C9309AF0D8 CRC64;  
 ASSOCIATED WITH RECEPTOR ACTIVATION.  
 N-LINKED (GLCNAC... ) (PROBABLE).  
 Query Match 79.6%; Score 910; DB 1; Length 461;  
 Best Local Similarity 75.2%; Pred. No. 2.1e-75;  
 Matches 158; Conservative 26; Mismatches 26; Indels 0; Gaps 0;



Query Match 77.7%; Score 888; DB 1; Length 457;  
Best Local Similarity 75.2%; Pred. NO. 2.1e-73;  
Matches 158; Conservative 23; Mismatches 29; Indels 0; Gaps 0;

Qy	1	SEHTRLVAKLFKDYSSVRPVEDHRQVETVAGLQILINDEVNQIVTNRUKQOM	60
Db	21	TDHETRLIGDLFANYNKVVRPVETVKQVVTVGLQILINDEVNQIVSTNIRLQOM	80
Qy	61	VDYLNKNWPDYGGVKKIHPSEKIRPDLVLVNNADGDFAIKVFVLLQYTGHTWTP	120
Db	81	RDVNLKWDPAKYGGVKKIRPSSDVWSFDVLVNNADGDFAIKSDKILLEYTGKLTWTP	140
Qy	121	PAIFKSYCEIIVTHFFPDEQNCMKLGTTWYDGSVAINPESDQPLDSNFMESGEWVIRE	180
Db	141	PAIFKSYCEIIVTVFPEDQNCMKFGTWYDGSLLVINPERDPLDSNFMASGEWMMKD	200
Qy	181	SRGKWHSVTYSCCPDTPYLOITVHFVNMQL	210
Db	201	YRCWKHWVYTCPCDPKPYLDITVHFVLMRL	230

RESULT 9	
ACHA_BRARE	
ID	ACHA_BRARE STANDARD; PRT; 456 AA.
AC	Q98880;
DT	15-JUL-1999 (Rel. 38, Created)
DT	15-JUL-1999 (Rel. 38, Last sequence update)
DE	15-JUN-2002 (Rel. 41, Last annotation update)
DE	Acetylcholine receptor protein, alpha chain precursor.
GN	CHRNAL OR NICL1.
OS	Brachydanio rerio (Zebrafish) (Danio rerio).
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC	Acinopterygii; Neopterygii; Teleostei; Ostariophysi; Cypriniformes;
OC	Cyprinidae; Danio.
OX	NCBI_TaxID=7955;
RN	[1]
RP	SEQUENCE FROM N.A.
RA	MEDLINE=98133893; PubMed=9475746;
RX	Sepich D.S., Wegner J., O'Shea S., Westerfield M.;
RT	"An altered intron inhibits synthesis of the acetylcholine receptor
RT	alpha-subunit in the paralyzed zebrafish mutant nicl.";
RL	Genetics 148:361-372(1998).
CC	-I- FUNCTION: AFTER BINDING ACETYLCHOLINE, THE ACHR RESPONDS BY AN
CC	EXTENSIVE CHANGE IN CONFORMATION THAT AFFECTS ALL SUBUNITS AND
CC	LEADS TO OPENING OF AN ION-CONDUCTING CHANNEL ACROSS THE PLASMA
CC	MEMBRANE.

CC -I- SUBUNIT: PENTAMER OF TWO ALPHA CHAINS, AND ONE EACH OF THE BETA,  
CC DELTA, AND GAMMA CHAINS.  
CC -I- SUBCELLULAR LOCATION: Integral membrane protein.  
CC -I- SIMILARITY: BELONGS TO THE LIGAND-GATED IONIC CHANNEL FAMILY.  
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CC -----  
CC EMBL; U70436; AAB09701.1; -;  
CC EMBL; U70437; AAB09770.1; -;  
CC EMBL; U70438; AAB16917.1; -;  
CC ZFIN; ZDB-GENE-980526-137; chrnrl.  
CC InterPro; IPR000188; GABAA\_receptor.  
CC -----

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DR InterPro: IPR001175; Neur_chan_1.
DR Pfam: PF02931; Neur_chan_LBD; 1.
DR Pfam: PF02932; Neur_chan_LBD; 1.
DR PRINTS: PR00252; NRIONCHANNEL.
DR TIGRPFAMs: TIGR00860; LIC; 1.
DR PROSITE: PS00236; NEUROTR_ION_CHANNEL; 1.
KW Receptor; Postsynaptic membrane; Ionic channel; Glycoprotein; Signal;
KW Transmembrane.
FT SIGNAL 1 20
FT CHAIN 21 456
BY SIMILARITY.
ACETYLCHOLINE RECEPTOR PROTEIN, ALPHA
CHAIN.
FT DOMAIN 21 230
FT TRANSMEM 231 255
FT TRANSMEM 263 281
FT TRANSMEM 297 316
FT TRANSMEM 317 428
FT TRANSMEM 429 447
FT DISULFID 148 162
FT DISULFID 212 213
BY SIMILARITY.
BY SIMILARITY.
ASSOCIATED WITH RECEPTOR ACTIVATION
(POTENTIAL).
CARBOHYD 161
SEQUENCE 456 AA; 52100 MW; 336825C5E358G6F3 CRC64;
Query Match 77.2%; Score 882; DB 1; Length 456;
Best Local Similarity 75.7%; Pred. No. 7.3e-73;
Matches 159; Conservative 22; Mismatches 29; Indels 0; Gaps 0;
QY 1 SEHETRLVAKLFKDYSSVVRPVVEDHQVVEVTAGLQIQLINVDVNVQIVTNNVRLKQW 60
DB 21 SEDETSLVTLTGYNKVPVSHFDPVVTGVLQIQLISVDVNVQIVTNNVRLKQW 80
QY 61 VDNLKNPDDYGGVKKIHPSEKIWRPDLVLYNNADGFAIVKFKVLLQYTGHTWTP 120
DB 81 KDVHLQWNPDDYGGVKKIHPSEKIWRPDLVLYNNADGFAIVKFKVLLQYTGHTWTP 140
QY 121 PAIFKSYCEIIVTHFPDQNCMKLGTWYDGSVVAINPESDQDPLSNFMSGEWVKE 180
DB 141 PAIFKSYCEIIVTHFPDQNCMKLGTWYDGSVVAINPESDQDPLSNFMSGEWVKE 200
QY 181 SRGKHSVTYSCCPDTPYLDITYHFVQRL 210
DB 201 YRSWKHWYVYACCPDTPYLDITYHFVQRL 230
PRT; 457 AA.
RESULT 10
ACHTL_XENLA
ID ACHL_XENLA STANDARD; PRT; 457 AA.
AC P22456;
01-AUG-1991 (Rel. 19, Created)
01-AUG-1991 (Rel. 19, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Acetylcholine receptor protein, alpha-1A chain precursor.
OS Xenopus laevis (African clawed frog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Anura; Mesobatrachia; Pipoidae; Pipidae;
OC Xenopodinae; Xenopus.
OX NCBI_TaxID=83355;
RN [1]
SEQUENCE FROM N.A.
TISSUE=Muscle;
MEDLINE=90136925; Pubmed=2300185;
RA Hartman D.S.; Claudio T.;
RT "Coexpression of two distinct muscle acetylcholine receptor alpha-
subunits during development.";
RL Nature 343:372-375(1990).
CC -!- FUNCTION: AFTER BINDING ACETYLCHOLINE, THE ACHR RESPONDS BY AN
EXTENSIVE CHANGE IN CONFORMATION THAT AFFECTS ALL SUBUNITS AND
LEADS TO OPENING OF AN ION-CONDUCTING CHANNEL ACROSS THE PLASMA
MEMBRANE.
CC -!- SUBUNIT: PENTAMER OF TWO ALPHA CHAINS, AND ONE EACH OF THE BETA,
DELTA, AND GAMMA (IN IMMATURE MUSCLE) OR EPSILON (IN MATURE
MUSCLE) CHAINS.
CC -!- SUBCELLULAR LOCATION: Integral membrane protein.

```

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CC -!- SIMILARITY: BELONGS TO THE LIGAND-GATED IONIC CHANNEL FAMILY.
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EMBL: X17244; CAA35109.1;
PIR: S08162; S08162.
InterPro: IPR001188; GABA_A_receptor.
InterPro: IPR001175; Neur_chan_1.
Pfam: PF02931; Neur_chan_LBD; 1.
Pfam: PF02932; Neur_chan_LBD; 1.
PRINTS: PR00252; NRIONCHANNEL.
TIGRPFAMs: TIGR00860; LIC; 1.
PROSITE: PS00236; NEUROTR_ION_CHANNEL; 1.
Postsynaptic membrane; Ionic channel; Glycoprotein; Signal;
KW Transmembrane.
FT SIGNAL 1 20
FT CHAIN 21 457
ACETYLCHOLINE RECEPTOR PROTEIN, ALPHA-1A
CHAIN.
EXTRACELLULAR.
CYTOPLASMIC.
ASSOCIATED WITH RECEPTOR ACTIVATION.
N-LINKED (GLCNAC... ) (PROBABLE).
SEQUENCE 457 AA; 52457 MW; 8728D227D905ED10 CRC64;
Query Match 76.6%; Score 875; DB 1; Length 457;
Best Local Similarity 74.8%; Pred. No. 3.2e-72;
Matches 157; Conservative 24; Mismatches 29; Indels 0; Gaps 0;
QY 1 SEHETRLVAKLFKDYSSVVRPVVEDHQVVEVTAGLQIQLINVDVNVQIVTNNVRLKQW 60
DB 21 SEDESRLINDLFKSNKVPVSHFDPVVTGVLQIQLINVDVNVQIVTNNVRLKQW 80
QY 61 VDNLKNPDDYGGVKKIHPSEKIWRPDLVLYNNADGFAIVKFKVLLQYTGHTWTP 120
DB 81 EDVHLKWPDDYGGVKKIHPSEKIWRPDLVLYNNADGFAIVKFKVLLQYTGHTWTP 140
QY 121 PAIFKSYCEIIVTHFPDQNCMKLGTWYDGSVVAINPESDQDPLSNFMSGEWVKE 180
DB 141 PAIFKSYCEIIVTHFPDQNCMKLGTWYDGSVVAINPESDQDPLSNFMSGEWVKE 200
QY 181 SRGKHSVTYSCCPDTPYLDITYHFVQRL 210
DB 201 YRSWKHWYVYACCPDTPYLDITYHFVQRL 230
PRT; 499 AA.
RESULT 11
ACH3_RAT
ID ACH3_RAT STANDARD; PRT; 499 AA.
AC P04757;
13-AUG-1987 (Rel. 05, Created)
13-AUG-1987 (Rel. 05, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Neuroal acetylcholine receptor protein, alpha-3 chain precursor.
GN CHRNA3 OR ACRA3.
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX NCBI_TaxID=10116;
RN [1]
SEQUENCE FROM N.A.
MEDLINE=86118671; Pubmed=3753746;

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OM protein - protein search, using sw model

Run on: January 14, 2003, 16:49:47 ; Search time 112 Seconds  
(without alignments)  
386.338 Million cell updates/sec

Title: US-09-820-339A-2  
Perfect score: 1143  
Sequence: 1 SEHETRLVAKLFKDYSSVVR.....SCDPTPYLDITYHFVQRL 210

Scoring table: BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 671580 seqs, 206047115 residues  
tal number of hits satisfying chosen parameters: 671580

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000  
Post-processing: Minimum Match 08  
Maximum Match 100%  
Listing first 45 summaries

Database : SPTREMBL\_21.\*  
1: sp\_archaea.\*  
2: sp\_bacteria.\*  
3: sp\_fungi.\*  
4: sp\_human.\*  
5: sp\_invertebrate.\*  
6: sp\_mammal.\*  
7: sp\_mhc.\*  
8: sp\_organelle.\*  
9: sp\_phase.\*  
10: sp\_plant.\*  
11: sp\_rodent.\*  
12: sp\_virus.\*  
13: sp\_virus.\*  
14: sp\_unclassified.\*  
15: sp\_rvirus.\*  
16: sp\_bacteriap.\*  
17: sp\_archaea.\*

Pred. No. is the number of results predicted by chance to have a  
score greater than or equal to the score of the result being printed,  
and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	1139	99.7	269	4 Q9BRE6	Q9bre6 homo sapien
2	1096	95.9	457	6 Q9XS62	Q9xs62 canis famil
3	594.5	52.0	341	11 Q8V111	Q8v111 mus musculu
4	594.5	52.0	489	4 Q9BR44	Q9br44 homo sapien
5	594.5	52.0	499	11 Q8VHH6	Q8vhh6 mus musculu
6	594.5	52.0	499	11 Q8R4G9	Q8r4g9 mus musculu
7	580.5	50.8	629	11 Q923N8	Q923n8 mus musculu
8	580.5	50.8	641	11 Q923N7	Q923n7 mus musculu
9	575.5	50.3	629	11 Q9ET51	Q9et51 mus musculu
10	571	50.0	475	6 Q8SPU7	Q8spu7 bos taurus
11	565.5	49.5	494	11 Q9R0W9	Q9r0w9 mus musculu
12	564	49.3	432	11 Q9QXK6	Q9qxk6 mus musculu
13	563.5	49.3	512	11 Q91X60	Q91x60 mus musculu
14	554	48.5	595	5 P91764	P91764 myzus persi
15	544	47.6	537	5 Q9U941	Q9u941 myzus persi
16	543	47.5	772	5 Q9W3G6	Q9w3g6 drosophila

17	543	47.5	776	5	O44202	O44202 drosophila
18	543	47.5	795	5	O18394	O18394 drosophila
19	541	47.3	531	5	O96632	O96632 heliothis v
20	538.5	47.1	464	11	Q8R5H3	Q8r5h3 mus musculu
21	538	47.1	515	5	O46133	O46133 locusta mig
22	536	46.9	540	5	O46134	O46134 locusta mig
23	532	46.5	523	5	O46128	O46128 heliothis v
24	531	46.5	533	5	Q8WRS1	Q8wrs1 chilo suppr
25	527	46.1	568	5	Q9NFR5	Q9nfr5 drosophila
26	524	45.8	532	5	Q9U940	Q9u940 myzus persi
27	521	45.6	494	5	Q8T7S3	Q8t7s3 drosophila
28	520.5	45.5	580	5	Q9VC72	Q9vc72 drosophila
29	518	45.3	523	5	Q8T789	Q8t789 drosophila
30	516.5	45.2	502	5	Q9N587	Q9n587 caenorhabdi
31	514.5	45.0	573	5	Q9GQ09	Q9gq09 caenorhabdi
32	513	44.9	559	5	O46132	O46132 locusta mig
33	512	44.8	494	5	Q8T7S1	Q8t7s1 drosophila
34	510	44.6	552	5	P91765	P91765 myzus persi
35	509	44.5	494	5	Q8T7S2	Q8t7s2 drosophila
36	503.5	44.1	545	5	O96631	O96631 heliothis v
37	499	43.7	501	5	Q9XZ14	Q9xz14 heliothis v
38	498.5	43.6	484	13	Q9PTS8	Q9pts8 gallus gall
39	498.5	43.6	509	5	Q8T7S0	Q8t7s0 drosophila
40	498	43.6	807	5	Q8T7V5	Q8t7v5 drosophila
41	496.5	43.4	552	5	Q9VC74	Q9vc74 drosophila
42	492	43.0	311	5	Q9VW18	Q9vw18 drosophila
43	491	43.0	496	5	Q9XZ13	Q9xz13 heliothis v
44	490	42.9	238	5	Q8SXP7	Q8sxp7 drosophila
45	486	42.5	536	5	Q8T0Y9	Q8t0y9 aphysia cal

## ALIGNMENTS

## RESULT 1

Q9BRE6 ID Q9BRE6 PRELIMINARY; PRT; 269 AA.  
AC Q9BRE6;  
DT 01-JUN-2001 (TREMBLrel. 17, Created)  
DT 01-JUN-2001 (TREMBLrel. 17, Last sequence update)  
DT 01-JUN-2002 (TREMBLrel. 21, Last annotation update)  
DE Similar to cholinergic receptor, nicotinic, alpha polypeptide 1 (muscle).  
OS Homo sapiens (Human).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.  
OX NCBI\_TaxID=9606;  
RN [1]  
RP SEQUENCE FROM N.A.  
RC TISSUE=MUSCLE;  
RA Strausberg R.;  
RL Submitted (APR-2001) to the EMBL/GenBank/DBJ databases.  
CC -|- SUBCELLULAR LOCATION: INTEGRAL MEMBRANE PROTEIN (BY SIMILARITY).  
CC -|- SIMILARITY: BELONGS TO THE LIGAND-GATED IONIC CHANNELS FAMILY.  
DR EMBL; BC006314; AAH06314.1; -;  
DR InterPro; IPR000188; GABAA\_receptor.  
DR InterPro; IPR001175; Neur\_channel.  
DR Pfam; PF02931; Neur\_chan\_LBD; 1.  
DR Pfam; PF02932; Neur\_chan\_memb; 1.  
DR PRINTS; PR00252; NRIONCHANNEL.  
DR PROSITE; PS00236; NEURCTR\_ION\_CHANNEL; 1.  
KW Glycoprotein; Ionic channel; Postsynaptic membrane; Receptor; Transmembrane.  
SQ SEQUENCE 269 AA; 30769 MW; 1874BFB614CEF18F CRC64;

Query Match 99.7%; Score 1139; DB 4; Length 269;  
Best local Similarity 99.5%; Pred. No. 1.4e-96;  
Matches 209; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 1 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQLIQLINDEVNQIVTTNRLKQOW 60  
|||||  
DB 21 SEHETRLVAKLFKDYSSVVRPVEDHROVVEVTAGLQLIQLINDEVNQIVTTNRLKQOW 80  
|||||



DR TIGRFS: TIGR00860; LIC; 1.  
DR PROSITE; PS00190; CYTOCHROME\_C; UNKNOWN\_1.  
DR PROSITE; PS00236; NEUROTR\_ION\_CHANNEL; 1.  
KW Glycoprotein; Ionic channel; Postsynaptic membrane; Receptor;  
KW Transmembrane.  
SQ SEQUENCE 489 AA; 55636 MW; F8C4F79BDC30A44E CRC64;  
Query Match 52.0%; Score 594.5; DB 4; Length 489;  
Best Local Similarity 51.0%; Pred. No. 2.7e-46;  
Matches 107; Conservative 41; Mismatches 61; Indels 1; Gaps 1;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHQRQVVEVTAGLQLIOLINDEVNQIVTNNRLKQOW 60  
DB 32 SEAEHRLFLFEDYNEIRPVANVSDPVIIHFVSMQSLVKVDEVNOIMETNLWLKQIW 91  
QY 61 VDNLKNPDDYGGVKKIHPSEKIRPDLYNNADGFAIVKFTKVLQYTGHTWTP 120  
DB 92 NDYKLKNPDSYGGAEFMRVPAQIKWPDVLYNNAGDQFQVDDKTKALLKTYGEVTP 151  
121 PAIFKSCYCEIIVTHFPDEQNCMKLGTWTYDGSVVAINPESDQDLSNFMESGEWIK 180  
DB 152 PAIFKSSCKIDVTYFPFDYQNTMKFGWSYDKAKIDLVLIGSSMNLKDYWESGEWAIK 211  
QY 181 SRGKHSVTYSCCPDTPYLDITYHFVMORL 210  
DB 212 APGYKHDIKYNCCBEI-YQDITYSLYIRRL 240  
RESULT 5  
Q8VHH6 PRELIMINARY; PRT; 499 AA.  
AC Q8VHH6;  
DT 01-MAR-2002 (Tremblrel. 20, Created)  
DT 01-MAR-2002 (Tremblrel. 20, Last sequence update)  
DT 01-JUN-2002 (Tremblrel. 21, Last annotation update)  
DE Neuronal nicotinic acetylcholine receptor alpha 3 subunit.  
GN CHRNA3.  
OS Mus musculus (Mouse).  
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.  
OX NCBI\_TaxID=10090;  
RN [1]  
RP Submitted (DEC-2001) to the EMBL/GenBank/DBJ databases.  
RC STRAIN=C57BL/6J; TISSUE=BRAIN;  
RA Brill J., Becker K., Becker C.-M.;  
RT "Mouse neuronal nicotinic acetyl choline receptor alpha 3 subunit mRNA";  
RW Submitted (DEC-2001) to the EMBL/GenBank/DBJ databases.  
SQ SEQUENCE 499 AA; 57125 MW; D21650F6A6D7C14B CRC64;  
Query Match 52.0%; Score 594.5; DB 11; Length 499;  
Best Local Similarity 51.4%; Pred. No. 2.8e-46;  
Matches 108; Conservative 39; Mismatches 62; Indels 1; Gaps 1;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHQRQVVEVTAGLQLIOLINDEVNQIVTNNRLKQOW 60  
DB 26 SEAEHRLFLFEDYNEIRPVANVSDPVIIHFVSMQSLVKVDEVNOIMETNLWLKQIW 85  
QY 61 VDNLKNPDDYGGVKKIHPSEKIRPDLYNNADGFAIVKFTKVLQYTGHTWTP 120  
DB 86 NDYKLKNPDSYGGAEFMRVPAQIKWPDVLYNNAGDQFQVDDKTKALLKTYGEVTP 145  
181 SRGKHSVTYSCCPDTPYLDITYHFVMORL 210  
DB 212 APGYKHDIKYNCCBEI-YQDITYSLYIRRL 240  
RESULT 6  
Q8R4G9 PRELIMINARY; PRT; 499 AA.  
AC Q8R4G9;  
DT 01-JUN-2002 (Tremblrel. 21, Created)  
DT 01-JUN-2002 (Tremblrel. 21, Last sequence update)  
DT 01-JUN-2002 (Tremblrel. 21, Last annotation update)  
DE Nicotinic acetylcholine receptor alpha 3 subunit.  
OS Mus musculus (Mouse).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.  
OX NCBI\_TaxID=10090;  
RN [1]  
RP SEQUENCE FROM N.A.  
RC STRAIN=DRB/21BG; TISSUE=ADRENAL GLAND;  
RA Lautner M.A., Stitzel J.A.;  
RT "Cloning of mouse nicotinic acetylcholine receptor alpha 3 subunit cDNA";  
RW Submitted (JAN-2002) to the EMBL/GenBank/DBJ databases.  
DR EMBL; AF472588; AAL84757.1;  
KW Receptor.  
SQ SEQUENCE 499 AA; 57109 MW; 721650E3F38D00FD CRC64;  
Query Match 52.0%; Score 594.5; DB 11; Length 499;  
Best Local Similarity 51.4%; Pred. No. 2.8e-46;  
Matches 108; Conservative 39; Mismatches 62; Indels 1; Gaps 1;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHQRQVVEVTAGLQLIOLINDEVNQIVTNNRLKQOW 60  
DB 26 SEAEHRLFLFEDYNEIRPVANVSDPVIIHFVSMQSLVKVDEVNOIMETNLWLKQIW 85  
QY 61 VDNLKNPDDYGGVKKIHPSEKIRPDLYNNADGFAIVKFTKVLQYTGHTWTP 120  
DB 86 NDYKLKNPDSYGGAEFMRVPAQIKWPDVLYNNAGDQFQVDDKTKALLKTYGEVTP 145  
121 PAIFKSCYCEIIVTHFPDEQNCMKLGTWTYDGSVVAINPESDQDLSNFMESGEWIK 180  
DB 146 PAIFKSSCKIDVTYFPFDYQNTMKFGWSYDKAKIDLVLIGSSMNLKDYWESGEWAIK 205  
QY 181 SRGKHSVTYSCCPDTPYLDITYHFVMORL 210  
DB 206 APGYKHDIKYNCCBEI-YQDITYSLYIRRL 234  
RESULT 7  
Q923N8 PRELIMINARY; PRT; 629 AA.  
AC Q923N8;  
DT 01-DEC-2001 (Tremblrel. 19, Created)  
DT 01-DEC-2001 (Tremblrel. 19, Last sequence update)  
DT 01-JUN-2002 (Tremblrel. 21, Last annotation update)  
DE B401117.2.1 (cholinergic receptor, nicotinic, alpha polypeptide 4 (isoform 1)).  
GN CHRNA4.  
OS Mus musculus (Mouse).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.  
OX NCBI\_TaxID=10090;  
RN [1]  
RP SEQUENCE FROM N.A.  
RC Wall M.;  
RW Submitted (APR-2001) to the EMBL/GenBank/DBJ databases.  
DR EMBL; AL450341; CAC40724.1;  
DR InterPro; IPR000188; GABAA\_receptor.

QY 121 PAIFKSCYCEIIVTHFPDEQNCMKLGTWTYDGSVVAINPESDQDLSNFMESGEWIK 180  
DB 146 PAIFKSSCKIDVTYFPFDYQNTMKFGWSYDKAKIDLVLIGSSMNLKDYWESGEWAIK 205  
QY 181 SRGKHSVTYSCCPDTPYLDITYHFVMORL 210  
DB 206 APGYKHDIKYNCCBEI-YQDITYSLYIRRL 234  
RESULT 6  
Q8R4G9 PRELIMINARY; PRT; 499 AA.  
AC Q8R4G9;  
DT 01-JUN-2002 (Tremblrel. 21, Created)  
DT 01-JUN-2002 (Tremblrel. 21, Last sequence update)  
DT 01-JUN-2002 (Tremblrel. 21, Last annotation update)  
DE Nicotinic acetylcholine receptor alpha 3 subunit.  
OS Mus musculus (Mouse).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.  
OX NCBI\_TaxID=10090;  
RN [1]  
RP SEQUENCE FROM N.A.  
RC STRAIN=DRB/21BG; TISSUE=ADRENAL GLAND;  
RA Lautner M.A., Stitzel J.A.;  
RT "Cloning of mouse nicotinic acetylcholine receptor alpha 3 subunit cDNA";  
RW Submitted (JAN-2002) to the EMBL/GenBank/DBJ databases.  
DR EMBL; AF472588; AAL84757.1;  
KW Receptor.  
SQ SEQUENCE 499 AA; 57109 MW; 721650E3F38D00FD CRC64;  
Query Match 52.0%; Score 594.5; DB 11; Length 499;  
Best Local Similarity 51.4%; Pred. No. 2.8e-46;  
Matches 108; Conservative 39; Mismatches 62; Indels 1; Gaps 1;  
QY 1 SEHETRLVAKLFKDYSSVVRPVEDHQRQVVEVTAGLQLIOLINDEVNQIVTNNRLKQOW 60  
DB 26 SEAEHRLFLFEDYNEIRPVANVSDPVIIHFVSMQSLVKVDEVNOIMETNLWLKQIW 85  
QY 61 VDNLKNPDDYGGVKKIHPSEKIRPDLYNNADGFAIVKFTKVLQYTGHTWTP 120  
DB 86 NDYKLKNPDSYGGAEFMRVPAQIKWPDVLYNNAGDQFQVDDKTKALLKTYGEVTP 145  
121 PAIFKSCYCEIIVTHFPDEQNCMKLGTWTYDGSVVAINPESDQDLSNFMESGEWIK 180  
DB 146 PAIFKSSCKIDVTYFPFDYQNTMKFGWSYDKAKIDLVLIGSSMNLKDYWESGEWAIK 205  
QY 181 SRGKHSVTYSCCPDTPYLDITYHFVMORL 210  
DB 206 APGYKHDIKYNCCBEI-YQDITYSLYIRRL 234  
RESULT 7  
Q923N8 PRELIMINARY; PRT; 629 AA.  
AC Q923N8;  
DT 01-DEC-2001 (Tremblrel. 19, Created)  
DT 01-DEC-2001 (Tremblrel. 19, Last sequence update)  
DT 01-JUN-2002 (Tremblrel. 21, Last annotation update)  
DE B401117.2.1 (cholinergic receptor, nicotinic, alpha polypeptide 4 (isoform 1)).  
GN CHRNA4.  
OS Mus musculus (Mouse).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.  
OX NCBI\_TaxID=10090;  
RN [1]  
RP SEQUENCE FROM N.A.  
RC Wall M.;  
RW Submitted (APR-2001) to the EMBL/GenBank/DBJ databases.  
DR EMBL; AL450341; CAC40724.1;  
DR InterPro; IPR000188; GABAA\_receptor.

